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GEO. B. CARPENTER & CO.

440 WELLS STREET

CHICAGO



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GEO. B. CARPENTER & CO.

MANUFACTURERS AND DISTRIBUTERS OF

GENERAL SUPPLIES AND EQUIPMENT

FOR

RAILROADS, STEAMSHIPS, CONTRACTORS, MILLS,
MINES, POWER PLANTS, MACHINE SHOPS
AND ALL FORMS OF INDUSTRIAL ACTIVITY

CORDAGE, TWINES, COTTON DUCK,
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SHIP CHANDLERS AND SAIL MAKERS

440 Wells Street

CHICAGO, ILLINOIS



STORE AND GENERAL OFFICES
 430-440 Wells Street, Corner Austin Avenue
 Chicago, Illinois

To The Trade

WE have just completed the seventy-sixth year of continuous and successful activity of "The Old Carpenter Shop." We are well aware that mere age counts for little unless the experience gained and strength acquired make for better service and greater usefulness. These are days of high speed, high tension and great responsibilities. Wideawake new methods are necessary to meet the demands of modern business. We are keeping step in the procession right behind the band.

Ours is a class of goods in which Quality and Service are primary considerations. We are confident that where life and property are at stake the surest economy lies in using the highest grade of goods obtainable, backed up by a house of record and standing.

For the convenience of our customers we shall issue from time to time a general discount guide applying to this catalogue. Owing to the constant fluctuations in a large proportion of our staple lines the quotations named herein are subject to change without notice.

When you are in Chicago we invite you to call and give us an opportunity to show you over our new plant, built up by seventy-five years of constant painstaking service in the wonderful city which had, when we began business, less than five thousand inhabitants, and is now the Great Central Market of the United States.

Yours respectfully,

Chicago, January 1, 1917

GEO. B. CARPENTER & CO.

Second Edition August 15, 1917.

g. Hasbems



WAREHOUSES A AND B
 Corner of Grand Avenue and Orleans Street
 CHICAGO, ILL.

Used solely for reserve stock in all lines, and for original package shipping.

OUR SOUTH CHICAGO STORE
GREAT LAKES SUPPLY COMPANY

Store and Office, 3217 East 92nd Street
Warehouses, 3207-9 East 92nd Street

We recommend for the convenience of the trade in the Calumet Region, our South Chicago Store



We carry a complete line, same as at the Main Store. All orders will receive careful attention and prompt delivery.

GEO. B. CARPENTER & CO.



OUR NEW WAREHOUSE AT SOUTH CHICAGO

THE business of our South Chicago branch, known as Great Lakes Supply Co., with offices at 3217 East 92nd Street, has grown to such proportions that we have recently added a new warehouse to the South Chicago equipment to take care of stocks of pipe, fittings, steel, iron, cordage and heavy hardware, and better serve the large business originating along the Calumet river.

The new warehouse is 230 feet long by 80 feet wide and 40 feet high. It is equipped with five standard gauge railroad tracks running the entire length of the building. We can load and unload a large number of cars under our own roof, and oftentimes transfer material direct from the mill car to our heavy motor trucks for quick delivery among the manufacturing centers of northern Illinois and Indiana.

With such facilities as these, combined with constant effort to make every department of this business render efficient and painstaking service, we feel certain that we can handle your supply business to your entire satisfaction.

GEO. B. CARPENTER & CO.

Hardware Department

FOLLOWING the policy which has guided us in the selection of all our lines of merchandise, our Hardware Department represents only the "Survival of the Fittest." Every item in the line has been chosen from the standpoint of the *user*—with an eye to *value* rather than *saleability*.

The original foundation of this department rested upon our trade with contractors, railroads and marine transportation interests, where our goods are expected to protect *life* and *limb*. It is self-evident that inferior goods have no place in exacting conditions of that nature. "*Value First*" is not only the best policy—it is the *only* policy, and the cheapest insurance.

Starting therefore with a high ideal of our obligations to the trade, we have gradually enlarged and extended our activity in the Hardware field, until we are now able to offer a wide range of goods which we can state confidently are the very best of their various kinds.

Some of the leading items in the line are:

Wire Rope	Carpenters' Tools
Derricks	Machinists' Tools
Derrick Fittings	Engineers' Tools
Steel Tackle Blocks	Winches
Wood Tackle Blocks	Hand Powers
Chain Hoists	Saw Rigs
Diving Apparatus	Gasoline Hoists
Well Machinery	Gas Engines
Concrete Mixers	Bolts
Drag Scrapers	Nuts
Power Pumps	Paints
Trench Pumps	Oils
Power Transmission Equipment	Greases
Shovels	Oakum
Iron Pipe	Naval Stores
Pipe Fittings	

DISSTON'S SAWS

Made with Hand or Rip Saw Teeth at same price

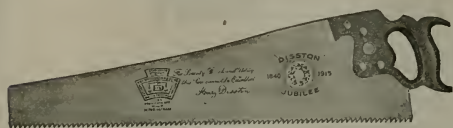


Fig. D115

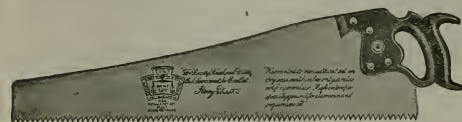


Fig. 120



Fig. 112

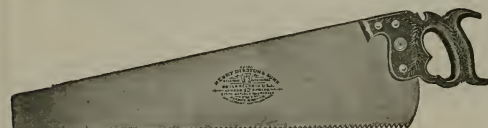


Fig. 12



Fig. 99



Fig. 9



Fig. 16

Fig. D115

Skewback, Extra London Spring Steel, Selected and Highly Polished Blade, Warranted, Rosewood Handle, Carved and Polished, Nickel Plated Screws.

RIP—30 inch.....	\$45.00	per doz.
28 inch.....	40.00	"
HAND—26 inch.....	36.00	"
PANEL—16 18 20 22 24 inches.	\$25.75 27.75 30.00 32.00 34.00	per doz.

Fig. 120

Acme Skewback, Extra London Spring Steel, Selected and Highly Polished Blade, Warranted, Apple Handle, Carved and Polished, Brass Screws.

A fast, smooth-cutting saw; particularly adapted for fine cabinet work, sawing mitres, and in all instances where rapid, smooth cutting is required. It will cut a joint sufficiently smooth to glue without planing. These saws are warranted to run without set in dry seasoned lumber only, and are not for general use. They are high in temper, specially ground for clearance and require no set.

RIP—30 inch.....	\$40.00	per doz.
28 inch.....	36.00	"
HAND—26 inch.....	32.00	"
PANEL—16 18 20 22 24 inches.	\$22.00 24.00 26.00 29.00 31.00	per doz.

Fig. 112

Skewback, Extra Refined London Spring Steel, Selected and Highly Polished Blade, Warranted, Apple Handle Carved and Polished, Brass Screws.

RIP—30 inch.....	\$39.00	per doz.
28 inch.....	34.00	"
HAND—26 inch.....	30.00	"
PANEL—16 18 20 22 24 inches.	\$19.75 21.75 24.00 26.00 28.00	per doz.

Fig. 12

Extra Refined London Spring Steel, Selected and Highly Polished Blade, Warranted, Apple Handle, Carved and Polished, Brass Screws.

RIP—30 inch.....	\$38.00	per doz.
28 inch.....	33.00	"
HAND—26 inch.....	29.00	"
PANEL—16 18 20 22 24 inches.	\$18.75 20.75 23.00 25.00 27.00	per doz.

Fig. 99

Extra Refined London Spring Steel, Selected Blade, Warranted, Close-up Apple Handle, Full Polished, Brass Screws.

RIP—30 inch.....	\$30.00	per doz.
28 inch.....	26.00	"
HAND—26 inch.....	23.00	"
PANEL—16 18 20 22 24 inches.	\$15.00 16.00 18.00 20.00 22.00	per doz.

Fig. 9

Extra London Spring Steel, Grained Blade, Warranted, Apple Handle, Full Polished, Brass Screws.

RIP—30 inch.....	\$28.50	per doz.
28 inch.....	25.50	"
HAND—26 inch.....	22.50	"
PANEL—16 18 20 22 24 inches.	\$14.75 16.25 18.00 20.00 21.50	per doz.

Fig. 16

Refined Crucible Steel, Grained Blade, Warranted, Apple Handle, Carved and Polished, Brass Screws. This saw has the blade set into handle similar to DS, on page 7.

RIP—30 inch.....	\$28.50	per doz.
28 inch.....	25.50	"
HAND—26 inch.....	22.50	"
PANEL—14 16 18 20 22 24 inches.	\$13.75 14.75 16.25 18.00 20.00 21.50	per doz.

DISSTON'S SAWS

Made with Hand or Rip Saw Teeth at same price

Fig. D100

Skewback, Refined Crucible Steel, Highly Polished Blade, Warranted, Apple Handle, Carved and Polished Brass Screws.

RIP —30 inch.....	\$31.00	per doz.
28 inch.....	28.00	"
HAND —26 inch.....	25.00	"
PANEL —16 18 20 22 24 inches.	\$16.75 18.25 20.00 22.00 24.50	per doz.

Fig. D8

Skewback, Refined Crucible Steel Blade, Warranted, Apple Handle, Full Polished, Brass Screws.

These Saws have all the latest improvements in hand saws, and are warranted superior. They combine the popular "Skewback," the peculiar shaped butt or heel, which, with the new screws, makes it almost impossible to work loose from the handle, and gives the full sweep of the saw without the possibility of catching in the work.

RIP —30 inch.....	\$28.50	per doz.
28 inch.....	25.50	"
HAND —26 inch.....	22.50	"
PANEL —16 18 20 22 24 inches.	\$14.75 16.25 18.00 20.00 21.50	per doz.

Fig. 8

Refined Crucible Steel, Grained Blade, Warranted, Apple Handle, Full Polished, Brass Screws.

RIP —30 inch.....	\$28.50	per doz.
28 inch.....	24.50	"
HAND —26 inch.....	21.50	"
PANEL —16 18 20 22 24 inches.	\$13.75 14.75 16.75 19.00 20.50	per doz.

Fig. 7

The Original Henry Disston Saw
Crucible Steel, Grained Blade, Warranted, Beech Handle, Full Polished, Brass Screws.

RIP —28 30 32 34 36 inches.	\$23.50 27.00 30.50 34.50 39.00	per doz.
HAND —26 inch.....	\$20.00	"
PANEL —14 16 18 20 22 24 in.	\$12.00 13.00 14.00 16.00 18.00 19.00	doz.

Fig. 76 DISSTON

"CENTENNIAL, No. 76"

No. 76 Centennial, Skewback, Crucible Steel Blade, Warranted, Apple Handle, Polished, Brass Screws.

16 18 20 22 inches.	\$14.00 15.00 17.00 19.00	per doz.
24 26 28 30 inches.	\$20.00 21.00 24.50 28.00	per doz.

Fig. 77

DISSTON, No. 77

For use in Dry Seasoned Lumber only

The No. 77 Saw is particularly adapted for fine cabinet work, sawing mitres, where rapid and smooth cutting is required. The use of a plane can be dispensed with, as they will cut a joint sufficiently smooth to glue without planing. These Saws are warranted to run without set in dry, seasoned lumber only, and are not for general use. They are high in temper, specially ground for clearance and require no set.

No. 77. Extra London Spring Steel Blade, Warranted, Apple Handle Polished, Brass Screws.

16 18 20 22 inches.	\$17.50 19.00 20.00 22.00	per doz.
24 26 28 30 inches.	\$24.00 25.00 29.00 33.00	per doz.

Fig. 107

KEYSTONE

Crucible Steel, Grained Blade, Beech Handle, Polished Edge, Brass Screws.

RIP —30 inch.....	\$23.50	per doz.
28 inch.....	20.50	"
HAND —26 inch.....	17.50	"
PANEL —14 16 18 20 22 24 in.	\$10.25 11.25 12.50 14.00 15.50 16.50	doz.



Fig. D100



Fig. D8



Fig. 8



Fig. 7



Fig. 76



Fig. 77



Fig. 107

DISSTON'S SAWS



Fig. 3



Fig. 1

Fig. 3

"BROWN'S"

Crucible Steel, Grained Blade, Beech Handle, Polished Edge, Brass Screws.	
RIP—30 inch.....	\$19.50 per doz.
28 inch.....	16.50 "
HAND—26 inch.....	13.50 "
PANEL—	
14 16 18 20 22 24 inches.	
\$7.25 8.25 9.25 10.50 11.50 12.50	per doz.

Fig. 1

"C. BISHOP"

Crucible Steel, Grained Blade, Beech Handle, Polished Edge, Brass Screws.	
RIP—30 inch.....	\$16.00 per doz.
28 inch.....	14.00 "
HAND—26 inch.....	12.00 "
PANEL—	
14 16 18 20 22 24 inches.	
\$6.50 7.50 8.00 9.00 10.00 11.00	per doz.

DISSTON'S HANDY SAW KITS



Fig. 101

The combination of Blades in any of these sets provides a Handy Kit for the practical mechanic, householder, farmer, etc.

Hardwood Handle, Carved and Polished, with a special lever device which is arranged to hold the blades comprising the Sets rigid and the special formation of the butt of the blades prevents wobbling.

The Special shaped Lever Bolt, permits by a quarter or half turn of same, the keeping of the Lever in position so it will not interfere with the working of the saw.

The Plumbers' Saw Blade is specially tempered for cutting nails, spikes, bolts, gas pipe, soil pipe, etc.

The blades are made of DISSTON CRUCIBLE STEEL, ground and polished.

No. 101, SIX BLADE SET, \$4.50

Cross-cut Saw Blade, 10 point.....	20 inch
Rip Saw Blade, 7 point.....	20 inch
Plumbers' Saw Blade.....	18 inch
Pruning Saw Blade.....	16 inch
Compass Saw Blade.....	14 inch
Keyhole Saw Blade.....	12 inch
Adjustable Handle	

No. 102, FIVE BLADE SET, \$4.00

Cross-cut Saw Blade, 10 point.....	20 inch
Rip Saw Blade, 7 point.....	20 inch
Plumbers' Saw Blade.....	18 inch
Compass Saw Blade.....	14 inch
Keyhole Saw Blade.....	12 inch
Adjustable Handle	

No. 103, FIVE BLADE SET, \$3.50

Cross-cut Saw Blade, 10 point.....	20 inch
Rip Saw Blade, 7 point.....	20 inch
Pruning Saw Blade.....	16 inch
Compass Saw Blade.....	14 inch
Keyhole Saw Blade.....	12 inch
Adjustable Handle	

No. 104, FOUR BLADE SET, \$3.00

Cross-cut Saw Blade, 10 point.....	20 inch
Rip Saw Blade, 7 point.....	20 inch
Compass Saw Blade.....	14 inch
Keyhole Saw Blade.....	12 inch
Adjustable Handle	

No. 105, THREE BLADE SET, \$2.75

Cross-cut Saw Blade, 10 point.....	20 inch
Rip Saw Blade, 7 point.....	20 inch
Compass Saw Blade.....	14 inch
Adjustable Handle	

Canvas Cases only\$6.00 per doz.

Put up in a durable canvas case, having strong leather bound edges, and containing separate compartments for each blade, with a special pocket for the handle. Convenient and light to carry.

"JACKSON" BACK SAW

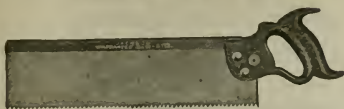


Fig. 91

Beech Handle, Polished Edge, Blued Back.

No. 1.....\$9.00 10.00 12.00 14.00 16.00 18.00 per doz.

CABINET SAW

Nickel-plated Lever Tightener

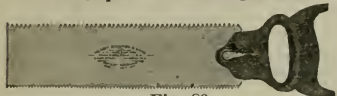


Fig. 80

Cherry Handle, Carved and Polished. Disston Crucible Steel Blade, Warranted. One edge toothed 10 points for cutting with the grain; the other, 15 points, for cross-cutting. $\frac{1}{8}$ inch hole in end for hanging up saw.

The blade is securely fastened in handle by the lever tightener, which permits a quick reversal of the handle to one side or the other according to the tooth-edge to be used.

Especially adapted for fine work, such as cabinet, pattern making, mitering, etc.

All sizes $3\frac{1}{2}$ inches wide.

No. 80.....\$8.00 8.25 9.00 10.00 11.00 12.00 per doz.

COMPASS SAW

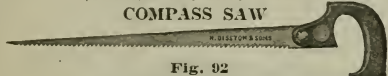


Fig. 92

Apple Handle, Brass Screws.

No. 2.....\$4.25 4.50 4.75 5.00 5.25 per doz.

COMPASS BLADES

Packed one dozen in box.

No. 2 Blades.....\$2.25 2.50 2.75 3.00 3.25 per doz.

These blades are sent not punched unless ordered otherwise.

KEYHOLE SAW AND PAD

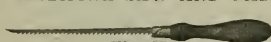


Fig. 95

Round, Hardwood Handle, Polished, Nickel-Plated Ferrule. The Handle is slotted clear through, permitting the adjustment of blade for length of cutting-edge required. The Blade, 10 inches long, ground thin-back, is firmly held in place by means of a steel grip inside of Handle, tightened by thumb-screw, which is nickel-plated.

No. 95. Keyhole Saw and Pad.....\$4.00 per doz.

Extra Blades for No. 95 Keyhole Saw 2.00

COPING SAW



Fig. 10

Hardwood Handle, Polished, Heavy Steel Ferrule, Nickel-plated and Threaded. Crucible Steel, Nickel-plated. Frame $\frac{3}{4}$ inch wide, $\frac{1}{4}$ inch thick, $4\frac{1}{2}$ inches deep from tooth-edge to inside of back. Length of blade, $6\frac{1}{2}$ inches from pin to pin.

This is a well-made Coping Saw, more efficient and stronger than the ordinary wire back style. The blade is controlled or adjusted by the two levers when sawing sharp angles, etc., and is easily inserted or removed.

No. 10. Coping Saw, Frame and Blade complete.....\$8.00 per doz.

Extra Blades, Fitted with Pins..... 5.50 per gro.

"DAVIS" BACK SAW



Fig. 90

Beech Handle, Polished Edge, 10 and 12 inch made with open Handle, 14 inch with closed Handle. All sizes made 12 point only.

No. 0 Davis.....\$8.00 9.00 10.00 per doz.

DOVETAIL SAW



Fig. 68

Polished Handle, Steel Back, Brass Plated, Extra Quality Spring Steel Blade, $1\frac{1}{2}$ inches wide under back, 26 Gauge, 17 Points.

No. 68.....\$7.25 7.75 8.75 9.50 per doz.

Same pattern and dimensions as No. 68. Made for cutting brass and copper in sheets or tubes.

No. 69.....\$8.25 8.75 9.75 10.50 per doz.

KEYHOLE SAW

Beech Handle, Brass Screws

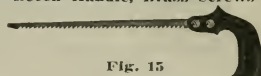


Fig. 15

No. 15. Keyhole Saw.....\$2.25 2.50 2.75 per doz.

Extra blades for No. 15 Keyhole Saw, \$2.00 per doz.

No. 43 COPING SAW

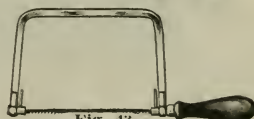


Fig. 43

Stiff flat spring steel, nickeled. Direction of blade controlled by pins in studs at either end of the blade so that it is unnecessary to remove the blade from frame when it is desired to change the direction of the cut. Blades strained by turning of the handle and may be locked facing in any desired direction by turning the handle against frame clamp.

No. 43. Price, including one No. 65 blade with each frame.....\$10.50 per doz.

No. 44 COPING SAW



Fig. 44

Nickeled all wire frame of stiff stock $\frac{1}{4}$ inch in diameter. Blades may be faced in four directions.

No. 44. Price, per doz. including 1 dozen No. 50 blades with each frame.....\$2.50

COPING SAW BLADES

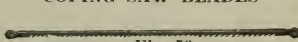


Fig. 50

No. 50. Price.....\$1.20 per gro.

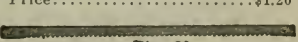
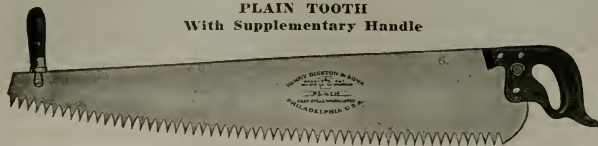


Fig. 60

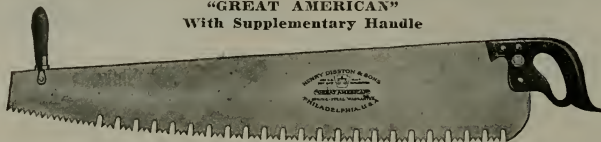
No. 60. Price.....\$5.50 per gro.

The same as No. 60, but $6\frac{1}{2}$ inches long.

DISSTON'S ONE MAN CROSS CUT SAWS

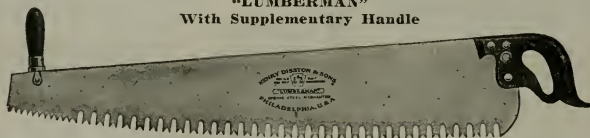
PLAIN TOOTH
With Supplementary Handle

Disston Plain Tooth	3	3½	4	4½	5	5½	6 feet.
Keystone Plain Tooth No. 4.....	\$2.25	2.60	3.00	3.35	3.70	4.10	4.45 each.
	2.10	2.45	2.80	3.15	3.50	3.85	4.20 "

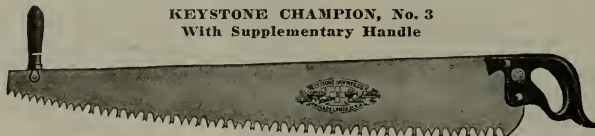
"GREAT AMERICAN"
With Supplementary Handle

3	3½	4	4½	5	5½	6 feet.
\$2.55	2.85	3.25	3.65	4.10	4.55	5.00 each.

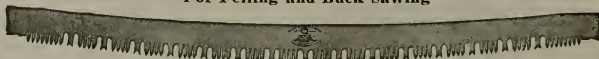
The Great American Saws furnished either Straight or Skewback at same price.

"LUMBERMAN"
With Supplementary Handle

3	3½	4	4½	5	5½	6 feet.
\$2.55	2.85	3.25	3.65	4.10	4.55	5.00 each.

KEYSTONE CHAMPION, No. 3
With Supplementary Handle

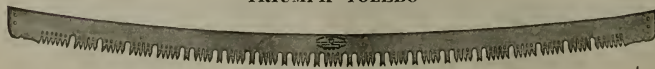
3	3½	4	4½	5	5½	6 feet.
\$2.10	2.45	2.80	3.15	3.50	3.85	4.20 each.

"BEAVER" HOLLOW BACK
For Felling and Buck Sawing

Three gauges thinner on back than on tooth-edge.

4	4½	5	5½	6	6½	7	7½	8 feet.
\$3.20	3.75	4.55	5.30	6.20	7.10	8.15	9.20	10.35 each.

TRIUMPH TOLEDO



4	4½	5	5½	6	6½	7	7 feet.
\$2.20	2.45	2.75	3.02	3.30	3.58	3.85	each.

Triumph Lance Perforated, same price as Triumph Toledo. Both saws ground two gauges thinner on back than on tooth-edge.

DISSTON'S TWO MAN CROSS CUT SAWS

TRIUMPH GREAT AMERICAN



4	4½	5	5½	6	6½	7 feet.
\$1.63	1.89	2.10	2.31	2.52	2.73	2.94 each.

Triumph Diamond Tooth, same price as Triumph Great American.

TRIUMPH CHAMPION



4	4½	5	5½	6	6½	7 feet.
\$1.44	1.62	1.80	1.98	2.16	2.34	2.52 each.

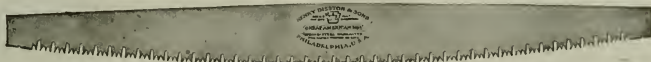
Triumph Plain and Tenon Tooth, same price as Triumph Champion.

TENON TOOTH, No. 1



	4	4½	5	5½	6	6½	7	7½	8 feet.
No. 1. Four gauges thinner on back than on tooth-edge,	\$2.60	2.92	3.25	3.57	3.90	4.22	4.55	4.87	5.20 each.
No. 2. Two gauges thinner on back than on tooth-edge,	2.40	2.70	3.00	3.30	3.60	3.90	4.20	4.50	4.80

"GREAT AMERICAN" No. 1



	4	4½	5	5½	6	6½	7	7½	8 feet.
No. 1. Five gauges thinner on back than on tooth-edge,	\$3.00	3.37	3.75	4.12	4.50	4.87	5.25	5.62	6.00 each.
No. 2. Two gauges thinner on back than on tooth-edge,	2.80	3.15	3.50	3.85	4.20	4.55	4.90	5.25	5.60

CHAMPION, No. 1



	4	4½	5	5½	6	6½	7	7½	8 feet.
No. 1. Four gauges thinner on back than on tooth-edge,	\$2.60	2.92	3.25	3.57	3.90	4.22	4.55	4.87	5.20 each.
No. 2. Two gauges thinner on back than on tooth-edge,	2.40	2.70	3.00	3.30	3.60	3.90	4.20	4.50	4.80

No. 2 only Toothed to ends for Pacific Coast trade. Same Price as No. 2.

"LUMBERMAN"



	4	4½	5	5½	6	6½	7	7½	8 feet.
No. 1. Four gauges thinner on back than on tooth-edge,	\$3.00	3.37	3.75	4.12	4.50	4.87	5.25	5.62	6.00 each.
No. 2. Two gauges thinner on back than on tooth-edge,	2.80	3.15	3.50	3.85	4.20	4.55	4.90	5.25	5.60

TUTTLE TOOTH, No. 1



	4	4½	5	5½	6	6½	7	7½	8 feet.
No. 1. Four gauges thinner on back than on tooth-edge,	\$2.60	2.92	3.25	3.57	3.90	4.22	4.55	4.87	5.20 each.
No. 2. Two gauges thinner on back than on tooth-edge,	2.40	2.70	3.00	3.30	3.60	3.90	4.20	4.50	4.80
Toothed to ends for Pacific Coast trade, 13 and 17 gauge,	3.50	3.96	4.38	4.82	5.25	5.69	6.12	6.56	7.00
Toothed to ends for Pacific Coast trade, 13 and 15 gauge,	3.30	3.71	4.13	4.54	4.95	5.36	5.78	6.19	6.60

Add 15% per foot or fraction of a foot on saws over 8 feet in length. Saws less than 4 feet in length take price of 4 feet. Cross-cut Saws thinner than sixteen gauge, extra price. Saws ground thinner on back than catalogued, extra price.

BAND SAWS

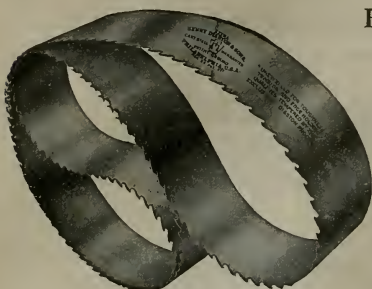


Fig. 131

All Band Saws and Band Resaws are made of Special High-Grade Crucible Steel, hardened and tempered by special processes exclusively their own.

Saws of odd widths, not listed, take price of next wider size listed.

Saws of heavier gauge than listed, add 5% to list for each gauge heavier.

No extra charge for saws one or two gauges thinner than list; when more than two gauges thinner, add 5% to list for each gauge.

Double-Edge Band Saws: List price per foot, all widths, advance 10% over list prices of single-edge saws as above.

Toothed Blanks, same price as finished saws.

Band Saw Blanks, bright, of any width, furnished to order but not warranted.

Instructions for Ordering

When ordering Band Saws, state whether Right or Left hand, gauge or thickness, space, depth and shape of teeth, straight or crowning back. If the saws are to be crowning on back, we finish them 1/64 in. crowning to each five feet in length, unless otherwise instructed.

		Per foot			Per foot
2	in. wide, 18 to 20 gauge	\$0.80	8	in. wide, 14 to 16 gauge	\$3.20
2½	in. wide, 18 to 20 gauge	1.00	9	in. wide, 14 to 16 gauge	3.60
3	in. wide, 18 to 20 gauge	1.20	10	in. wide, 14 to 16 gauge	4.00
3½	in. wide, 18 to 20 gauge	1.40	11	in. wide, 14 to 16 gauge	4.50
4	in. wide, 17 to 19 gauge	1.60	12	in. wide, 13 to 15 gauge	5.00
4½	in. wide, 17 to 19 gauge	1.80	13	in. wide, 13 to 15 gauge	6.00
5	in. wide, 17 to 19 gauge	2.00	14	in. wide, 13 to 15 gauge	7.00
5½	in. wide, 17 to 19 gauge	2.20	15	in. wide, 12 to 14 gauge	8.50
6	in. wide, 17 to 19 gauge	2.40	16	in. wide, 12 to 14 gauge	10.00
6½	in. wide, 17 to 19 gauge	2.60	17	in. wide, 12 to 14 gauge	14.00
7	in. wide, 16 to 18 gauge	2.80	18	in. wide, 12 to 14 gauge	18.00

NARROW BAND SAWS

Narrow Band Saws are furnished set and filed, **Not joined**. Give full particulars when ordering.

PRICES FOR BAND SAWS, SET AND FILED, NOT JOINED

		Per foot	Net Prices for Joining
		\$0.16	Each
¼	inch wide, 21 or 22 gauge	.17	.20
⅜	inch wide, 21 or 22 gauge	.18	.20
½	inch wide, 21 or 22 gauge	.20	.25
⅝	inch wide, 20 or 21 gauge	.22	.25
¾	inch wide, 20 or 21 gauge	.25	.25
1	inch wide, 20 or 21 gauge	.27	.30
1 1/8	inch wide, 20 or 21 gauge	.31	.30
1 1/4	inch wide, 19 or 20 gauge	.35	.35
1 1/2	inch wide, 19 or 20 gauge	.38	.35
1 3/4	inch wide, 19 gauge	.41	.35

Band Saws, Tempered for sawing metal, add 50% to above list.



Fig. 132

SOFT-BACK BAND SAWS

Hardened on tooth-edge only, for cutting metal. Furnished in special lengths or coils.

		Per foot	Net Prices for Joining
		\$0.08 1/4	\$0.15
¼	inch wide by 23 gauge; 16, 19, 22 or 26 points	.10 1/2	.15
⅜	inch wide by 23 gauge; 16, 19, 22 or 26 points	.11 1/2	.15
½	inch wide by 21 gauge; 14, 16, 18 or 22 points	.13 1/2	.20
⅝	inch wide by 23 gauge; 16, 19, 22 or 26 points	.15 1/2	.20
¾	inch wide by 21 gauge; 14, 16, 18 or 22 points		
1	inch wide by 23 gauge; 14, 16, 18 or 22 points		
1 1/8	inch wide by 21 gauge; 14, 16, 18 or 22 points		

SAW CLAMP

HANDY, No. 5

Patented December 27, 1910

IMPROVED SAW CLAMP, No. 2

Japanned, length of jaw, 9 1/4 inches.
No. 2. Per doz....\$12.00



Fig. 133



Fig. 134

Fastened to bench by screws. Length over all, 14 1/4 inches. Filing length of jaw, 13 inches. Weight, 3 1/2 lbs.

No. 5. Japanned.....per doz. \$15.00

Silver Solder for Brazing Band Saws, net, per ounce \$1.00

SOLID TOOTH CIRCULAR SAWS

Extra Quality
Patent
Ground
and
Tempered



Fig. 121

Superior
Workmanship
Guaranteed
as per
Warranty

Diameter, Inches	Thickness, Gauge	Size of Hole, Inch	Price, each	Extra for Each Gauge Heavier	Beveling New Saws (Grinding or Bevel- ing of Old Saws, Extra) per gauge	NET PRICES	
						Extra for Setting and Sharpening if	
						Rip Saws	Cross Cut Saws
1	24	%	\$1.00	\$0.01	\$0.06	\$0.03	\$0.04
1½	24	%	1.00	.01	.07	.03	.05
2	23	%	1.00	.01½	.08	.04	.05
2½	22	%	1.00	.02	.09	.04	.06
3	21	½	1.00	.02½	.10	.05	.06
3½	20	½	1.00	.03	.12	.05	.07
4	19	¾	1.20	.03	.14	.06	.07
5	19	¾	1.50	.04	.16	.06	.08
6	18	¾	1.80	.05	.18	.07	.10
7	18	¾	2.10	.06	.20	.08	.11
8	18	¾	2.40	.08	.22	.10	.13
9	17	¾	2.80	.10	.25	.11	.14
10	16	1	3.30	.12	.28	.12	.16
11	16	1	3.90	.16	.30	.13	.18
12	15	1	4.40	.20	.35	.15	.20
14	14	1½	5.30	.25	.40	.18	.23
16	14	1½	6.50	.30	.50	.20	.25
18	13	1½	8.00	.40	.60	.23	.28
20	13	1½	9.50	.50	.70	.25	.32
22	12	1½	11.50	.60	.80	.28	.35
24	11	1½	13.50	.70	.90	.31	.40
26	11	1½	16.00	.85	1.05	.35	.45
28	10	1½	18.50	1.00	1.20	.38	.50
30	10	1½	21.00	1.15	1.30	.42	.55
32	10	1½	\$24.00	\$1.30	\$1.40	\$0.45	\$0.60
34	9	1½	27.00	1.50	1.55	.50	.65
36	9	1½	31.00	1.80	1.70	.55	.70
38	9	1½	35.00	2.00	1.85	.60	.75
40	9	2	41.00	2.30	2.00	.65	.80
42	8	2	47.00	2.60	2.20	..	.85
44	8	2	55.00	3.00	2.40	..	.90
46	8	2	65.00	3.50	2.60	..	1.00
48	8	2	75.00	4.00	2.80	..	1.10
50	7	2	85.00	4.50	3.00	..	1.20
52	7	2	95.00	5.00	3.25	..	1.30
54	7	2	105.00	6.00	3.50	..	1.40
56	7	2	120.00	7.00	3.75	..	1.50
58	7	2	135.00	8.00	4.05	..	1.60
60	6	2	150.00	9.00	4.35	..	1.70
62	6	2	170.00	10.00	4.65	..	1.80
64	6	2	190.00	12.00	5.00	..	1.90
66	6	2	210.00	15.00	5.35	..	2.00
68	6	2	235.00	18.00	5.75	..	2.10
70	5	2	265.00	21.00	6.15	..	2.20
72	5	2	300.00	24.00	6.55	..	2.30
74	5	2	340.00	27.00	7.00	..	2.40
76	5	2	390.00	30.00	7.50	..	2.50
78	5	2	465.00	34.00	8.10	..	2.60
80	5	2	550.00	38.00	8.80	..	2.70
82	5	2	640.00	43.00	9.60	..	2.80
84	5	2	730.00	48.00	10.50	..	3.00

Circular Saws of uneven diameters not listed, take price of next larger size listed.

Circular Saws for Bone, Horn and Ivory, add 50 % to above list.

No extra charge for Saws one gauge thicker than list.

No extra charge for Saws one, two or three gauges thinner than list; when more than three gauges thinner, add 5 % to list for each gauge.

Circular Saws 48 inches and larger, thinner than 10 gauge, not warranted.

Circular Saws 42 inches or less in diameter beveled one gauge without extra charge; 44 inches and larger, beveled two gauges without extra charge.

Circular Saws hollow ground or concaved, add for each gauge hollow ground or concaved double the price listed for beveling.

LARGER SAWS FURNISHED. PRICES UPON APPLICATION

SAW TOOLS AND ACCESSORIES



Fig. 141. SAW SET

For Hand, Band, Scroll, Circular or Mill

- No. 101. For Hand Saws, from 32 to 16G.....\$1.00
 No. 103. For Single Tooth Cross-cut and small Circular Saws, 20 to 14G..... 1.50
 No. 104. For Champion M Tooth Cross-cut 22 to 14 G..... 1.50
 No. 105. For Board and Timber Saws and all kinds of Re-saws, from 6 to 14 Gauge..... 2.00

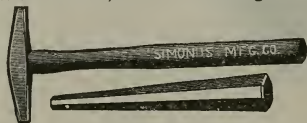


Fig. 142

- Steel Swage Bar, large size, 12x2x1½ in. per lb. \$0.65
 Steel Swage Bar, med. size, 12x1½x1½ in. " .65
 Steel Swage Bar, small size, 10x1½x¾ in. " .65
 Hammer 1.00

SWAGE OR UPSET



Fig. 143

- Saw Swage, No. 1.....each \$2.75
 Saw Swage, No. 2..... 2.25
 Saw Swage (special), for wide band saws " 2.25



Fig. 144

- Saw Gaugeeach \$2.25

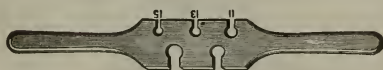


Fig. 145

- Saw Set, as per above cut, for medium or large circulars.....each \$1.50
 Saw Sets, with one handle, for small circulars and band sawseach 1.00

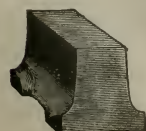


Fig. 146

SAW MAKER'S ANVIL

Steel Faced

- Anvils weighing less than 180 lbs.per lb. \$0.15
 Anvils weighing 180 lbs. or overper lb. .18
 Stock size Anvils 10x6 face, 86, 110 and 145 lbs.; 12x6 face, 250 lbs.

Each Handle on the Disston Hand Saws is separately slit, bored and fitted to its blade, insuring the correct "Hang" to the saw when entering the work.

The Stock Handle, bored and slit, will not fit holes in the blade from which old handle has been taken, for the reason given above.



Handle No.	Per Dozen			
	18-20 inch	22-24 inch	26 inch	28 inch
25, Cherry (Slit only).....			\$1.80	
107, Beech (Slit only).....	\$1.75	\$1.75	2.00	\$2.20
7, Beech (Slit only).....	2.25	2.25	2.50	2.75
8, Apple, (Slit only).....	3.00	3.25	4.00	4.25
D100, Apple, Carved (Bored and Slit).....	4.00	4.25	5.00	5.25
D8, Apple, (Bored and Slit).....	3.00	3.25	4.00	4.25
120, Apple, Carved (Bored and Slit).....	4.00	4.25	5.00	5.25
12 and 112, Apple, Carved (Bored and Slit).....	5.25	5.50	6.50	6.75
16, Apple, Carved (Bored and Slit).....	4.00	4.25	5.00	5.25

Fig. 103. Climax Reversible. 13½ inches long, 1½ inches diameter at thickest part. Grey iron casting in front and back. Malleable iron bolt and nut.

Per pair.....\$0.27

Fig. 112. 14½ inches long, 1½ inches diameter. This is a patent handle, double grip, malleable iron castings, loop rod.

Per pair\$0.46

Fig. 122. It will be noticed that the cap is made with a long neck, tapped to fit the threaded end of loop rod. This rod extends through the handle, making the connection and line of pressure, when on saw, from top of handle to bottom edge of blade, thus insuring a strong, firm grip on saw, without possibility of lost motion or wobbling. 8 inches long, diameter 1½ inches.

Per pair\$0.63



Fig. 103 Fig. 112 Fig. 122

Fig. 115. Universal handle, 14 inches long, 1½ inches diameter, double grip, malleable iron castings, painted red, reversible eight positions. A complete and perfect handle, with guard for protection of the hand. So constructed that it may be used at any angle.

Per pair..\$1.68

Fig. 120. This design eliminates the use of a nut at the back of handle, and provides a good, easy and comfortable grip for a direct thrust. Another new feature is the "Sprocket Nut" by means of which the handle is quickly and firmly attached to the saw. Made of selected, thoroughly seasoned hardwood, well finished. Length 12 inches, diameter at thickest part 1½ inches. Extra heavy, best malleable iron castings, bolt and nut.

Per pair\$1.68

Fig. 120 Fig. 115

ADZE EYE NAIL HAMMERS

(HEXAGON NECK, ROUND POLL PATTERN)
Hand Shaved, Second Growth Hickory Handles
Full Polished

"VANDOR" VANADIUM

Special material, combined with extreme care in forging and tempering make this hammer the finest Carpenter Hammer ever produced. The exclusive design of hexagon neck and reinforced claw appeals on sight to a high-grade workman. It is pre-eminently a high-grade craftsman's tool. Made for hard work and lots of it. Packed in individual cartons, six cartons to a container. Has the well known "Vandor" bite to the claw.



Fig. 1652

Cat. No.	Size	Weight of Head oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
1652	2 1/2	16	13	1/2	\$12.00
1653	2	13	13	1/2	12.00
1654	2 1/2	10	13	1/2	12.00
*1660	7 1/2	16	13	1/2	12.00

*Ripping Hammer; Straight Claw.

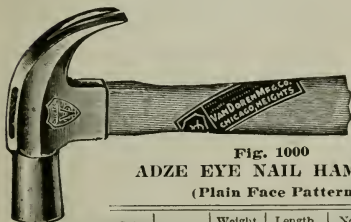


Fig. 1000

ADZE EYE NAIL HAMMERS (Plain Face Pattern)

Cat. No.	Size	Weight of Head oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
1000	0	28	15 1/2	1/3	\$12.50
1001	1	20	14	1/2	9.00
1002	1 1/2	16	13	1/2	8.50
1003	2	13	13	1/2	8.00
1004	3	7	12	1/2	7.50
1005	4	5	12	1/2	7.25



Fig. 1050

ADZE EYE NAIL HAMMERS (Bell Face Pattern)

Cat. No.	Size	Weight of Head oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
1050	10	28	15 1/2	1/3	\$12.50
1051	11	20	14	1/2	9.00
1052	1 1/2	16	13	1/2	8.50
1053	12	13	13	1/2	8.00
1054	13	7	12	1/2	7.50
1055	14	5	11	1/2	7.25

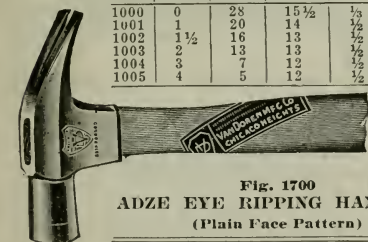


Fig. 1700

ADZE EYE RIPPING HAMMERS (Plain Face Pattern)

Cat. No.	Size	Weight of Head oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
1700	700	28	15 1/2	1/3	\$12.50
1701	701	20	14	1/2	9.00
1702	701 1/2	16	13	1/2	8.50
1703	702	13	13	1/2	8.00



Fig. 1750

ADZE EYE RIPPING HAMMERS (Bell Face Pattern)

Cat. No.	Size	Weight of Head oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
1750	710	28	15 1/2	1/3	\$12.50
1751	711	20	14	1/2	9.00
1752	711 1/2	16	13	1/2	8.50
1753	712	13	13	1/2	8.00



Fig. 1950

ADZE EYE NAIL HAMMERS (Plain Face Pattern)

Cat. No.	Size	Weight of Head oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
1950	0	28	15 1/2	1/3	\$6.50
1951	1	20	14	1/2	6.00
1952	1 1/2	16	13	1/2	5.50
1953	2	13	13	1/2	5.00
1954	3	7	12	1/2	5.00



Fig. 2000

ADZE EYE NAIL HAMMERS (Bell Face Pattern)

Cat. No.	Size	Weight of Head oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
2000	10	28	15 1/2	1/3	\$6.50
2001	11	20	14	1/2	6.00
2002	1 1/2	16	13	1/2	5.50
2003	12	13	13	1/2	5.00
2004	13	7	12	1/2	5.00

GEO. B. CARPENTER & CO.

DROP FORGED HAMMERS

(Handled)

These hammers are drop forged from high grade CRUCIBLE STOCK TOOL STEEL. They are carefully hardened and tempered by an improved process. Handles are of best quality second growth hickory thoroughly well seasoned before use. They will not shrink or come loose in the head.



Fig. 103
MACHINISTS' BALL PEIN
HAMMER
(Octagon Pattern)

Cat. No.	Size	Weight of Head lbs. oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
103	4-0	6	12	$\frac{1}{2}$	\$12.00
104	3-0	8	13	$\frac{1}{2}$	12.00
105	2-0	12	14	$\frac{1}{2}$	12.00
106	0	1	14 $\frac{1}{2}$	$\frac{1}{2}$	12.50
107	1	1 $\frac{1}{4}$	15	$\frac{1}{2}$	13.50
108	2	1 $\frac{1}{2}$	16	$\frac{1}{2}$	14.50
109	3	1 $\frac{3}{4}$	16 $\frac{1}{2}$	$\frac{1}{2}$	15.50
110	4	2	17	$\frac{1}{2}$	16.50



Fig. 203
MACHINISTS' CROSS PEIN
HAMMERS
(Octagon Pattern)

Cat. No.	Size	Weight of Head lbs. oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
203	4-0	6	12	$\frac{1}{2}$	\$12.00
204	4-0	8	13	$\frac{1}{2}$	12.00
205	2-0	12	14	$\frac{1}{2}$	12.00
206	0	1	14 $\frac{1}{2}$	$\frac{1}{2}$	12.50
207	1	1 $\frac{1}{4}$	15	$\frac{1}{2}$	13.50
208	2	1 $\frac{1}{2}$	16	$\frac{1}{2}$	14.50
209	3	1 $\frac{3}{4}$	16 $\frac{1}{2}$	$\frac{1}{2}$	15.50
210	4	2	17	$\frac{1}{2}$	16.50

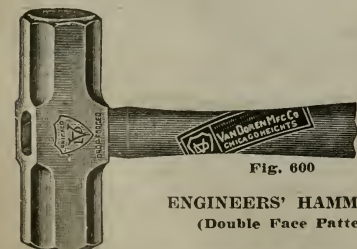


Fig. 600
ENGINEERS' HAMMERS
(Double Face Pattern)

Cat. No.	Size	Weight of Head lbs. oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
600	1	1	8	$\frac{1}{2}$	\$14.50
601	2	2	6	$\frac{1}{2}$	16.50
602	3	3	16	$\frac{1}{2}$	18.00
603	4	3	10	$\frac{1}{2}$	19.50



Fig. 154
MACHINISTS' STRAIGHT PEIN
HAMMER
(Octagon Pattern)

Cat. No.	Size	Weight of Head lbs. oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
154	3-0	8	13	$\frac{1}{2}$	\$12.00
155	2-0	12	14	$\frac{1}{2}$	12.00
156	0	1	14 $\frac{1}{2}$	$\frac{1}{2}$	12.50
157	1	1 $\frac{1}{4}$	15	$\frac{1}{2}$	13.50
158	2	1 $\frac{1}{2}$	16	$\frac{1}{2}$	14.50
159	3	1 $\frac{3}{4}$	16 $\frac{1}{2}$	$\frac{1}{2}$	15.50
160	4	2	17	$\frac{1}{2}$	16.50

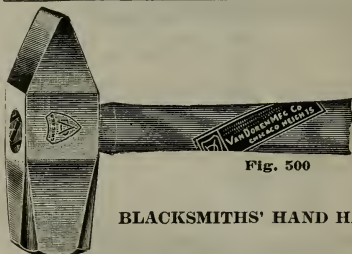


Fig. 500
BLACKSMITHS' HAND HAMMERS

Cat. No.	Size	Weight of Head lbs. oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
500	0	1	10	$\frac{1}{2}$	\$13.00
501	1	2	16	$\frac{1}{2}$	14.00
502	2	2	10	$\frac{1}{2}$	15.00
503	3	3	17	$\frac{1}{2}$	16.00
504	4	3 $\frac{1}{2}$	17	$\frac{1}{2}$	17.00
505	5	4 $\frac{1}{2}$	17	$\frac{1}{2}$	19.00

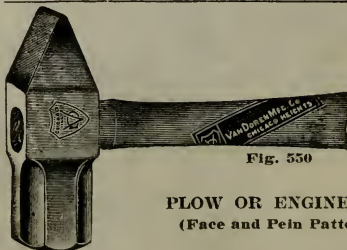


Fig. 550
PLOW OR ENGINEERS'
(Face and Pein Pattern)

Cat. No.	Size	Weight of Head lbs. oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
550	0	1	2	$\frac{1}{2}$	\$12.00
551	1	1	15	$\frac{1}{2}$	13.00
552	2	2	16	$\frac{1}{2}$	14.00
553	3	2 $\frac{1}{2}$	16	$\frac{1}{2}$	15.00
554	4	3	16	$\frac{1}{2}$	16.00

BRICKLAYERS', FARRIERS' AND TINNERS' HAMMERS



Fig. 460

MACHINISTS' RIVETING HAMMERS (Plain Eye Pattern)

Cat. No.	Size	Weight of Head lbs. oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
460	0	4	12	1/2	\$5.50
461	1	7	12	1/2	5.75
462	2	9	13	1/2	6.00
463	3	12	13	1/2	6.25
464	4	15	14	1/2	6.50
465	5	1 2	14	1/2	7.00
466	6	1 6	15	1/2	7.50
467	7	1 10	15	1/2	8.00



Fig. 700

TINNERS' RIVETING HAMMERS

Cat. No.	Size	Weight of Head lbs. oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
700	00	4	11	1/2	\$6.00
701	0	6	12	1/2	6.00
702	1	8	12	1/2	6.00
703	2	12	13	1/2	6.25
704	3	1 1	14	1/2	6.75
705	4	1 1/4	14	1/2	7.25
706	5	1 1/2	15	1/2	7.75

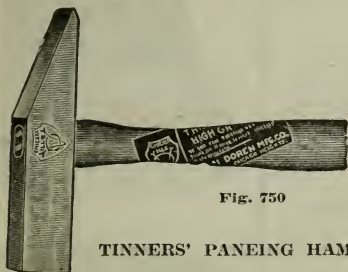


Fig. 750

TINNERS' PANEING HAMMERS

Cat. No.	Size	Weight of Head lbs. oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
750	1	8	12	1/2	\$6.00
751	2	12	12	1/2	6.25
752	3	1 1	12	1/2	6.75
753	4	1 1/4	12	1/2	7.25
754	5	1 1/2	12	1/2	7.75



Fig. 800

PLAIN EYE BRICKLAYERS' HAMMERS

Cat. No.	Size	Weight of Head lbs. oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
800	1	2	11	1/2	\$11.00
801	2	1 8	11	1/2	12.00
802	3	2 12	12	1/2	13.00
803	4	2 8	12	1/2	14.00



Fig. 900

ADZE EYE FARRIERS' HAMMERS

Octagon Poll. Bent Claw

Cat. No.	Size	Weight of Head oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
900	120	7	13	1/2	\$7.50



Fig. 851

ADZE EYE FARRIERS' HAMMERS

Octagon Poll. Straight Claw.

Cat. No.	Size	Weight of Head oz.	Length Over All, in.	No. in Pkg. doz.	Price per doz.
851	101	10	13	1/2	\$7.75
852	102	12	13	1/2	9.00

AXES

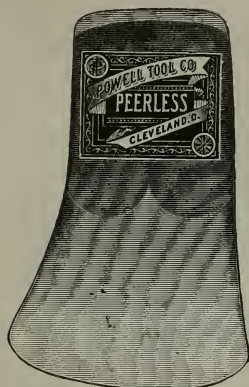
The material used in the construction of our Axes is of the very best, and the workmanship employed in the forging, grinding and tempering is the most skilled obtainable.

Handles not Furnished with the Axes Listed on This Page
For Handles see Index

THE PEERLESS AXE

Gold Bronze Finish; Polished Bit.
The Single Bit can be furnished in the Michigan and Dayton patterns, and the Double Bit in the Michigan and Western patterns.

Weights: All weights 3 to 6 lbs.
Usual assortments are 3 to 4, 3½ to 4½, 4 to 5, 4½ to 5½, 4½ to 6, 5 to 6 lbs. Packed one dozen in a box. Always specify weight and pattern.



PRICES

Base 2 to 3¾ lbs.

Peerless, single bit. \$12.00 doz.

Double bit 20.00 "

Red Ridge, single bit 10.00 "

Double bit 18.00 "

DOZEN ASSORTMENTS

Per doz.

3 to 4¼ lbs., advance \$0.25

3½ to 4½ lbs., " .50

4 to 5¼ lbs., " .75

4¾ to 5¾ lbs., " 1.00

5¼ to 6¼ lbs., " 1.25

5¾ to 6¾ lbs., " 1.75

6¼ to 7¼ lbs., " 2.25

6¾ to 8 lbs., " 2.75

All 8 lbs., " 3.25

RED RIDGE AXES

The Special Ridge Feature makes a larger axe than regular patterns of the same weight, giving a better balance on the handle. Single Bit made in 27 patterns; Double Bit made in 8 different patterns.

Weights: All weights 3 to 8 lbs.
Usual assortments are 3 to 4, 3½ to 4½, 4 to 5, 4½ to 5½, 4½ to 6, 5 to 6 lbs. Packed one doz. in a box. Always specify weight and pattern.



HANDLED AXES



Fig. 191. "Niagara"



Fig. 192. "Fireman's"



Fig. 193. "Usona"

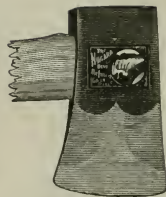


Fig. 193. "Boys"

NIAGARA HOLLOW BEVEL

Michigan Pattern

Blue Beveled; Polished Bit. Pole painted red; handled with 36 inch high quality hickory handle. All weights; usual assortment, $3\frac{1}{2}$ to $4\frac{1}{2}$ lbs. Packed one dozen in case.
 Price per doz., base.....\$10.00

FIREMEN'S AXE

Regulation Axe, Peerless Brand.

Highest quality; body painted red. Pick and Bit polished. Red handle, 36 inches long. The increasing tendency for protective ordinances is constantly enlarging the field of this line. It is no longer confined to the hook and ladder truck, or the railroad emergency case, but is now in demand in factories, theatres, hotels and public buildings. The fact that emergency only brings them into use should not be an excuse for inferiority. Get the best and know it will serve you well when the time comes.

Price per doz., $4\frac{1}{2}$ lbs.....\$15.00
 Price per doz., 6 lbs.....18.00

USONA HANDLED AXE

A serviceable Axe for general use. Ebony Black Finish; cutting edge only polished. Handled with serviceable 36 inch hickory handle.

Price per doz., base.....\$9.50

BOYS' HANDLED AXE

Niagara Brand

Same description as Niagara Axe above, with exception of handle, which is 28 inches long. Weight without handle, $2\frac{1}{4}$ lbs. No. 2 size.

Price per doz.....\$7.50

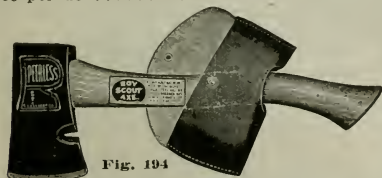


Fig. 194

BOY SCOUT AXE

Regulation Boy Scout Axe (with nail slot). Same high quality of material and workmanship as in our men's axes. Sheath made of high grade leather; fastens with snap, and has belt loop.

Complete, per doz.....\$10.00
 Axes only (no sheath), per doz.....8.00

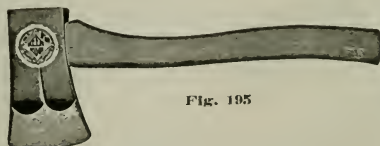


Fig. 195

KEEN RIDGE HUNTER'S AXE

Made of high quality Steel, Gun Metal Body; Fire Blued Bit. Made only in No. 0 size. Has 14 inch hickory handle. Weight, $1\frac{1}{4}$ lb. without handle.

Price per doz.....\$6.50

BROAD AXES AND ADZES

Fig. 201. Broad Axe
Peerless Brand

Gold Bronze Finish; Polished Bit. Recognized as a superior axe in the logging, tie cutting and lumbering industries.

Weight each, lbs.	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11
Price per doz.	\$44.00	\$46.00	\$48.00	\$50.00	\$54.00



Fig. 202. Carpenter



Fig. 203. Railroad



Fig. 204. Track



Fig. 205. Ship

Our Adzes are hand made from the best material money can buy. The forging is a continuous process which saves several heatings and thoroughly refines the steel. A special feature is the reinforcing of the blade under the eye where the strain is greatest.

PEERLESS CARPENTERS' ADZE

Half or Full Head; Gold Bronze Finish. Length of cut 3 to 4 ½ inches. Packed one dozen in box. We will ship 4 ½ inch cut unless otherwise ordered.

Price per dozen, cut 3 to 4 ½ inches. \$21.00

FULL HEAD RAILROAD ADZE**American Axe Brand**

Ebony (black) Finish. Cutting Edge Polished. Length of cut, 4 ½ to 6 inches. A superior tool for railroad work. Packed one dozen in box, assorted 5 to 5 ½ inches unless otherwise ordered.

Price per dozen, cut 5 to 5 ½ inches. \$21.00

USONA FULL HEAD TRACK ADZE

Forged Tool Steel. Ebony Finish. Length 4 ½ to 5 ½ inches.

Price per doz., cut 4 ½ to 5 ½ inches. . . \$14.00

PEERLESS SHIP ADZES**Plain or Lipped Pattern**

Black Finish; Polished Bit. Packed 1 dozen in box. Plain Adzes are shipped 4 ¼ inch cut unless otherwise ordered. Lipped pattern, are assorted 5 to 5 ½ inches unless otherwise ordered. In ordering please state pattern wanted.

Plain pattern, cut 4 to 4 ½ inches. Price per doz. \$22.00

Lipped pattern, cut 4 ½ to 5 ½ inches. Price per doz. \$30.00

PEERLESS BRAND HATCHETS

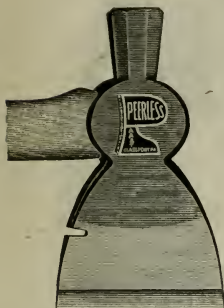


Fig. 211. "Shingling"

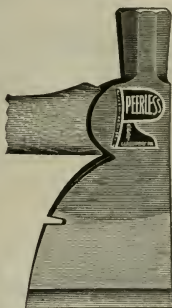


Fig. 212. "Half"

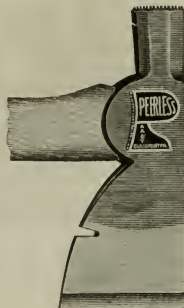


Fig. 213. "Lath"

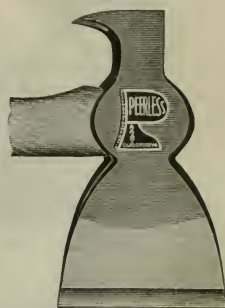


Fig. 214. "Claw"

These Hatchets are all hand forged from highest quality steel and by the most modern processes. The bits or cutting edges of "Peerless" Brand Hatchets are carefully tempered by a special process that insures uniformity of proper degree.

All "Peerless" Brand Hatchets are fitted with carefully selected second growth all white hickory handles, properly shaped and balanced.

All the Hatchets on this page with the exception of Hurd's "Barreling" Hatchets, are gold bronze finish.

"SHINGLING"

No.	0	1	2	3	4
Price, per doz.	\$7.50	8.00	8.50	9.00	9.50
Cut, inches	3	3½	3¾	4¾	4¾

"HALF"

No.	1	2	3	4
Price, per doz.	\$8.50	9.00	9.50	10.00
Cut, inches	3¾	3½	3¾	4¼

"LATH"

No.	0	1	2	3
Price, per doz.	\$7.50	8.00	8.50	9.00
Cut, inches	2¼	2½	2¾	3

"CLAW"

No.	0	1	2	3	4
Price, per doz.	\$8.50	9.00	9.50	10.00	10.50
Cut, inches	3	3½	3¾	4¾	4¾

"BROAD"

No.	1	2	3	4
Price, per doz.	\$10.50	11.50	13.00	14.50
Weight, lbs.	1½	1¾	2¾	2½
Cut, inches.	4	4½	5	5½
No.	5	6	7	8
Price, per doz.	\$16.50	18.00	19.50	22.00
Weight, lbs.	2¾	3¼	3¾	4¼
Cut, inches.	6	6½	7	7½

"FLOORING"

Our FLOORING HATCHET meets the long-felt want of a Special Hatchet for flooring, and also for general all-around work.

No.	1	2	3
Price, per doz.	\$12.00	13.00	15.00
Cut, inches.	3¾	4¼	4¾

"BARRELING"

Gun Metal Finish
"Hurd's" Pattern

No.	1	2
Price, per doz.	\$8.00	8.50
Cut, inches	2¼	2½

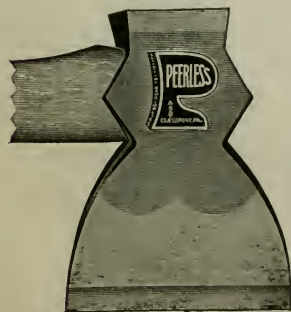


Fig. 215. "Broad"



Fig. 216. Hurd's "Barreling"



Fig. 217. "Flooring"

HATCHETS



Fig. 221. Claw

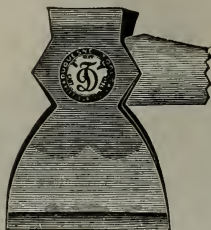


Fig. 222. Broad



Fig. 223. Shingling

DUQUESNE BRAND

Drop forged from high quality tool steel. Silverbronze finish. White select hickory handles.

"CLAW"

No.	0	1	2	3	4
Price, per doz.	\$8.50	9.00	9.50	10.00	10.50
Cut, inches	3	3½	3¾	4¾	4¾

"SHINGLING"

No.	0	1	2	3	4
Price, per doz.	\$7.50	8.00	8.50	9.00	9.50
Cut, inches	3	3½	3¾	4¾	4¾

"BROAD"

No.	1	2	3	4
Price, per doz.	\$10.50	11.50	13.00	14.50
Cut, inches	4	4½	5	5½
Weight, lbs.	1½	1¾	2½	2½
No.	5	6	7	8
Price, per doz.	\$16.50	18.00	19.50	22.00
Cut, inches	6	6½	7	7½
Weight, lbs.	2¾	3¼	3¾	4¼

BLOOD'S RIG AND DERRICK BUILDERS' HATCHET

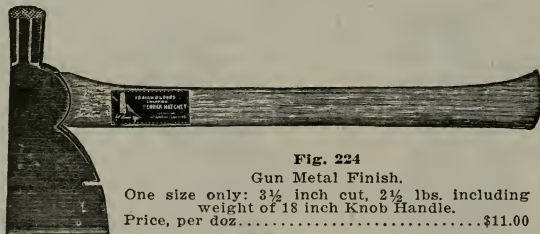


Fig. 224

Gun Metal Finish.

One size only: 3½ inch cut, 2½ lbs. including weight of 18 inch Knob Handle.

Price, per doz. \$11.00

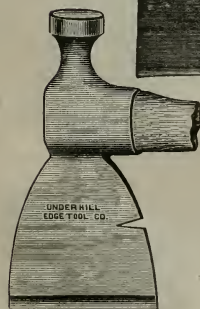


Fig. 225. Haines Half

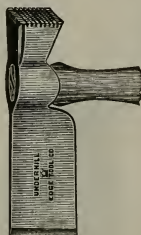


Fig. 225A Chicago, No. 40, Lath

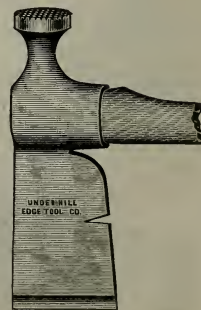


Fig. 226. Haines Lath

UNDERHILL'S STAR LATH HATCHET

"Chicago" Pattern, No. 40; Milled Head; Square Poll, 81 Point. Second Growth White Hickory Handle.

One size, 2 inch cut.

Price, per doz. \$16.50

UNDERHILL'S, HAINES PATTERN ADZE EYE HATCHET

Polished. Furnished in two sizes. Cuts 3¾ and 3½ inches.

"HALF"

No.	1	2
Price, per doz.	\$14.50	15.00
Cut, inches	3¾	3½

"LATH"

Price, per dozen	\$14.50
Cut, inches	2¾

FOR HANDLES, SEE INDEX

MILLER'S FALLS HAND AND BREAST DRILLS



Fig. 1

No. 1. Tropical wood handles. Malleable iron frame, black enameled. Other metal parts nicked. Hollow end handle containing eight wood boring points. Removable side grip handle, cut gears, small gear of steel. Ball thrust bearing. Threejaw chuck for round drills 0 to $\frac{1}{8}$ inch. Length 12 $\frac{1}{2}$ inches. Price each\$1.70



Fig. 5

No. 5. Same as No. 1 except that large gear has wide rim and small idler gear is added. Length 12 $\frac{1}{2}$ inches. Price each\$2.00



Fig. 104

No. 104. Stained hardwood; malleable iron frame; nicked chuck. Hollow end handle containing 3 wood boring points. Cut gears with adjustable equalizing bearing. Pinion of steel. Three-jawed chuck holding and centering accurately round shank drills from 0 to $\frac{1}{8}$ inch in diameter. Jaws are actuated by springs which are protected from injury. Price, per dozen, including 8 fluted drill points\$19.00



Fig. 303

No. 303. Hollow main handles of hardwood; solid steel frame. Large gear red; all other metal parts nicked. Cut gears. Pinion of steel. Detachable side handle. Three-jawed chuck holding round shanks from 0 to $\frac{1}{8}$ inch in diameter. Length 11 $\frac{1}{4}$ inches. Price, per dozen\$17.00



Fig. 980

No. 980. Hardwood handles. Malleable iron frame, other metal parts nicked. Hollow end handle with receptacle for holding twist drills. Removable side grip handle. Speed instantly changeable. Pinion and shifting device inclosed. Cut gears, small gears of steel. Ball thrust bearing, three-jaw Star chuck with springs protected from injury, takes drills 0 to $\frac{3}{8}$ inch. Length 15 $\frac{1}{4}$ inches. Price each\$3.35



Fig. 12

No. 12. Malleable iron main stock enameled black; chuck and crank nicked. Breast plate adjustable to different positions and removable. Patent level attachment. Cut gears; large gear with idler roll to equalize bearings. Thoroughly equipped with ball bearings. Extensible crank with radius from 4 to 6 inches. Changeable speed from even to 3 to 1. Master chuck holding round shanks from $\frac{1}{8}$ to $\frac{1}{2}$ inch in diameter, all sizes of bit stock and No. 1 taper shanks. Length 17 $\frac{1}{2}$ inches. Price, per dozen\$40.00



Fig. 112

No. 112. A popular price Breast Drill of strong, substantial design. Hardwood handles, malleable iron frame, polished Barber chuck with alligator jaws for bit stocks and many sizes of round shanks. Length 15 inches. Price each\$2.00



Fig. 19

No. 19. Hardwood handle, cast iron frame, rolled steel main stock. Breast plate adjustable, cut gears, ball thrust bearing, adjustable crank radius 4 to 7 inches. Changeable speed from even to 3 to 1. Barber chuck with alligator jaws. Length 18 inches. Price each\$2.25

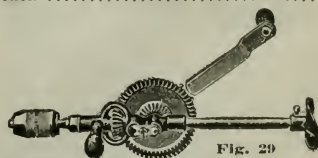


Fig. 29

No. 29. The same as Drill No. 19 except that chuck is of the Star pattern with three jaws holding round shanks from 0 to $\frac{1}{2}$ inch in diameter. Jaws are operated by springs that are protected from injury. Price, per dozen\$35.00

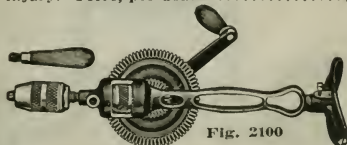


Fig. 2100

No. 2100. Malleable iron frame; no nicked parts. Breast plate adjustable to different positions. Instantly changeable speed from 1 $\frac{1}{4}$ to 1 and 4 to 1. Cut gears; small gears of steel. Chuck of Star pattern with 3 jaws operated by springs that are protected from injury; holds round shanks from 0 to $\frac{1}{2}$ inch in diameter. Length 17 $\frac{1}{2}$ inches. Price, per dozen\$42.00

BRACES AND BORING TOOLS

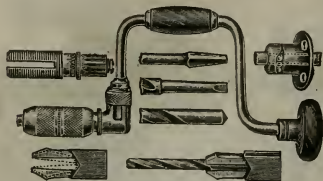


Fig. 730

HOLDALL RATCHET BRACE

Nos. 729 to 734. Ball bearing head. Master chuck has forged steel jaws that conform to the shape of bit held, whether square, taper, or round, from $\frac{1}{8}$ to $\frac{1}{2}$ inch. Free acting sweep handle. Patent non-loosening screw holding chuck to sweep. Cocobolo wood and polished and nickeled metal parts.

No.	729	730	731	732	733	734
Sweep, inch	16	14	12	10	8	6
Price	\$3.00	2.70	2.55	2.40	2.25	2.10

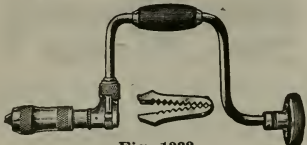


Fig. 1322

Nos. 1320 to 1324. Polished and nickeled steel including steel clad head, chromized head and handle. Latter with inserted steel rings and pressed steel bolsters. Friction washer under the head. Forged steel alligator jaws.

No.	1320	1321	1322	1323	1324
Sweep, inch..	14	12	10	8	6
Price	\$1.50	1.40	1.30	1.20	1.10



Fig. 421

Nos. 421 to 423. A popular ratchet brace at moderate price. Metal parts polished and nickeled. Head and handle of stained hardwood. Steel rings inserted in sweep handle which is held in place by pressed steel bolsters. Alligator jaws of malleable iron. Open ratchet.

No.	421	422	423
Sweep, inch..	12	10	8
Price	\$1.15	1.10	1.05

SAMSON BIT BRACE

Strongest Made, Ball Bearing



Fig. 1203

This brace has a Positive Ratchet instead of a Ring Ratchet, and patent forged jaws of $\frac{3}{8}$ inch capacity.

No.	1203	1202	1201	1200
Sweep, inch..	8	10	12	14
Per dozen	\$48.50	52.00	55.50	59.00

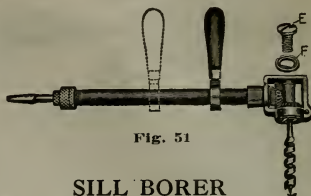


Fig. 51

SILL BORER

No. 51. Sill Borer or Joist Tool. For use in connection with a bit brace or breast drill in boring at right angles in cramped places and indispensable for car builders, electricians, carpenters and other wood workers. Main frame malleable iron; working parts, including gears, bushings, etc., of hardened steel. Ball bearing and efficient take-ups for bushings in case of wear. Adjustable steadying handle. Patent cup washer (F) and screw (E) to hold head in place without working loose. Length $16\frac{1}{2}$ inches. Depth of head $2\frac{3}{8}$ inches. Price, per dozen. \$30.00

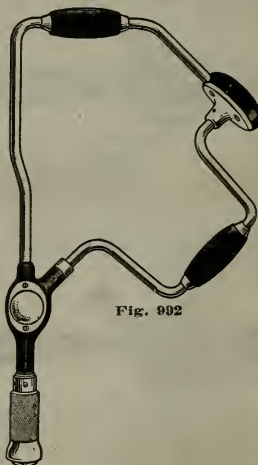
CORNER BIT BRACES

Fig. 992

For corner work, when using a bit of ordinary size, these braces will work much faster than a regular ratchet brace.

These Corner Braces are made in two styles, each style in two sizes of sweep. Both styles have metal clad ball bearing heads, and the head and both handles are made of cocobolo. The quill is fastened to the head by three screws, one of which goes through that part of the frame where it enters the head, securely fastening all three together.

The gears are of machine steel, the teeth carefully cut, and the whole mechanism enclosed to protect same from dirt as well as to guard the user's hands.

No. 992 style has Interlocking jaws; No. 993 the Universal pattern. Both are drop-forgings, machined, and have springs for automatic release. All metal parts of brace are nickel plated.

No.	Sweep, inch	Jaws	Package	Per Doz.
992	8	Interlocking	$\frac{1}{2}$ doz., wt. 7 $\frac{3}{4}$ lbs.	\$33.00
992	10	Interlocking	$\frac{1}{2}$ doz., wt. 7 $\frac{3}{4}$ lbs.	36.00
993	8	Universal	$\frac{1}{2}$ doz., wt. 8 $\frac{1}{4}$ lbs.	33.00
993	10	Universal	$\frac{1}{2}$ doz., wt. 8 $\frac{1}{4}$ lbs.	36.00



No. 22 SOLID CENTER AUGER BIT
Irwin Pattern



No. 14 EXTENSION LIP AUGER BIT
Jennings Pattern



No. 28 SINGLE TWIST AUGER BIT
Ford Pattern



No. 20 UTILITY AUGER BIT
Common Pattern

Prices per Dozen. Sizes in Sixteenths											
Size	3	4	5	6	7	8	9	10	11	12	13
Price	\$6.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00	7.00	7.00	8.25
Size	14	15	16	17	18	19	20	21	22	24	
Price	\$8.25	9.50	9.50	12.00	12.00	14.00	14.00	16.00	16.00	18.00	

Prices per Set, Not in Any Fancy Boxes or Rolls

3 1/2 quarters, 1 each	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16/16ths	List	\$7.50
20 1/2 quarters, 1 each	4, 5, 6, 7, 8, 10, 12, 14, 16/16ths	"	4.90
11 1/4 quarters, 1 each	4, 5, 6, 8, 10, 12/16ths	"	3.00

SHIP AUGER AND CAR BITS—Wood Boring Brace Drills



No. 39 SHIP AUGER BIT

These tools are suited for difficult boring of any kind. They are durable, serviceable, easy-working Auger Bits and are recommended for boring in hard, knotty or end grain wood.

Prices per dozen. Sizes in sixteenths

Size	4	5	6	7	8	9	10	11
Price	\$6.00	6.00	6.00	6.00	6.00	7.50	7.50	9.00
Size	12	13	14	15	16	18	20	
Price	\$9.00	10.50	10.50	12.00	12.00	13.50	15.00	

LIST OF NO. 39 SHIP AUGER BIT SETS

Price Each. Sets Listed by Quarters

Set	11 1/4	18 3/4	20 1/2	32 1/2
Price	\$3.40	5.25	5.75	9.00



No. 54 DOUBLE SPUR CAR BIT

The Double Spur Car Bit as shown has 12 inch twist and measures 16 to 17 inches overall. Special attention is given to the clearance and cutting qualities required for bits boring to the greater depths.

Prices per Dozen. Sizes in Sixteenths

Size	3	4	5	6	7	8	9	10	11	12
Price	\$11.25	11.25	11.25	11.25	11.25	11.25	12.50	13.75	15.00	16.25
Size	13	14	15	16	17	18	20	22	24	
Price	\$17.50	19.00	20.50	22.00	24.00	26.00	30.00	34.00	38.00	



No. 46 WOOD BORING BRACE DRILL

Prices per Dozen. Sizes in Thirty-seconds

Size	3	4	5	6	7	8	9	10	11
Price	\$1.60	1.60	1.75	2.00	2.50	3.00	3.50	3.50	4.00
Size	12	13	14	15	16	18	20	22	24
Price	\$4.00	4.50	4.50	5.00	5.00	5.50	6.00	6.50	7.00

CAR BITS AND SHIP AUGERS



Fig. 58. Solid Center Ship Auger Car Bit

Our Solid Center Ship Auger Car Bits measure about 17 inches overall, of which 12 inches is twist. This form of tool with a single spiral around its solid stem has long been popular in auger bit lengths and is meeting with much favor in these longer lengths.

The head of this bit is made of a single cutter with a side lip, but without spur. This permits very easy cutting, but allows a good body of metal for sharpening and wear.

These tools are regularly furnished with twist, round and screw full polished. The sizes listed are carried in stock.

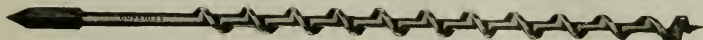


Fig. 59. Solid Center Ship Auger

In common with other tools of the Ship Auger type, Solid Center Ship Augers have a length of twist varying with their diameter. The 4-16 and 5-16 have 8-inch twist; the 6-16, 7-16 and 8-16, 10-inch twist; the 9-16 to 1 inch, 12-inch twist; and those over 1 inch, 15-inch twist.

The shank adds about 5 inches to this length. The square portion of this shank has a considerable body of metal since this is frequently required for welding to an iron handle.

The regular finish is full polished twist, round and screw.



Fig. 62. 8-inch Ship Auger Car Bit

The Ship Auger Car Bit shown above has 8-inch twist and is 12 inches overall.



Fig. 64. Ship Auger Car Bit

This Ship Auger Car Bit is made with 12-inch twist and measures about 17 inches overall, including a shank suited for the ordinary brace. The tool is popular with car builders and all others desiring to bore to the greater depths or in rough timber.

Prices per Dozen.					Sizes in Sixteenths.				
Size	4	5	6	7	8	9	10	11	12
No. 58.....	\$11.00	11.00	11.00	11.00	11.00	11.00	11.00	12.00	12.00
No. 59.....	11.00	11.00	11.00	11.00	11.00	11.00	11.00	12.00	12.00
No. 62.....	10.00	10.00	10.00	10.00	10.00	10.00	10.00	11.00	11.00
No. 64.....	11.00	11.00	11.00	11.00	11.00	11.00	11.00	12.00	12.00
Size	13	14	15	16	17	18	19	20	21
No. 58.....	\$13.00	13.00	14.50	14.50	16.00	16.00	18.00	18.00	20.00
No. 59.....	13.00	13.00	14.50	14.50	16.00	16.00	18.00	18.00	20.00
No. 62.....	12.00	12.00	13.50	13.50	15.00	15.00	....	16.50	....
No. 64.....	13.00	13.00	14.50	14.50	16.00	16.00	18.00	18.00	20.00
Size	22	23	24	25	26	27	28	29	30
No. 58.....	\$20.00	23.00	23.00	23.00	27.00	27.00	32.00	32.00	45.00
No. 59.....	20.00	23.00	23.00	23.00	27.00	27.00	32.00	32.00	45.00
No. 62.....	18.50	21.00	21.00	21.00	27.00	27.00	32.00	32.00	45.00
No. 64.....	20.00	23.00	23.00	23.00	27.00	27.00	32.00	32.00	45.00

NO. 48 BELL HANGER DRILL



Our Bell Hanger Drill is made similar to our Brace Drill except for extra length over all as size is fitted with two cutters—the No. 1 size has a No. 1 cutter from $\frac{5}{8}$ to $1\frac{1}{8}$ and No. 2 cutter $4\frac{1}{2}$ inches long and the remainder being round shaft and square shank.

Prices Per Dozen—Sizes in Thirty-Seconds

Size	6	8	10	12	14
12 inch	\$ 5.00	\$ 5.00	\$ 5.50	\$ 6.00	\$ 7.00
18 inch	7.00	7.00	7.50	8.00	9.00
24 inch	9.00	9.00	9.50	10.00	11.00
30 inch	11.00	11.00	11.50	12.00	13.00
Size	16	18	20	22	24
12 inch	8.00	9.00	10.00	11.00	12.00
18 inch	10.00	11.00	12.00	13.00	14.00
24 inch	12.00	13.00	14.00	15.00	16.00
30 inch	14.00	15.00	15.00	16.00	17.00
Size	26	28	30	32	36
12 inch	13.00	14.00	15.00	16.00	18.00
18 inch	15.00	16.00	17.00	18.00	20.00
24 inch	17.00	18.00	19.00	20.00	21.00
30 inch	18.00	19.00	20.00	21.00	22.00

CLARK'S EXPANSIVE BITS



We offer this as the latest type of expansive bit. It is free in cutting, rigid in position, and easy of adjustment, while having but three pieces removable from the body of the tool.

This bit is made in two sizes, cutting from $\frac{3}{8}$ to 3 inches and from $\frac{5}{8}$ to $1\frac{1}{4}$ inches. Each size is fitted with two cutters—the No. 1 size has a No. 1 cutter from $\frac{5}{8}$ to $1\frac{1}{8}$ and No. 2 cutter from $1\frac{1}{8}$ to $1\frac{3}{4}$ inches. The No. 2 size has a No. 3 cutter from $\frac{7}{8}$ to $1\frac{1}{4}$ and No. 4 cutter from $1\frac{1}{4}$ to 3 inches.

The adjustment of the cutter is controlled by a worm working in the rack cut on the base of blade. The movement is easy and positive. The cutter is locked securely at any position by a screw which is on the opposite side of the head and does not show in this illustration.

The cutter and adjusting worm are fitted in solid stock, making a strong bit, and they are very accurately fitted to insure perfect adjustment. These tools are finely polished throughout with the square portion of shank left black. They are packed one with its extra cutter in a case and six cases in a box.

LIST OF EXPANSIVE BITS AND PARTS

Prices Per Dozen

Tools and Parts	Range	List Price	Tools and Parts	Range	List Price
No. 1 Bit complete	$\frac{3}{8}$ to 3	\$22.00	No. 3 Cutter	$\frac{7}{8}$ to $1\frac{1}{4}$	\$5.25
No. 2 Bit complete	$\frac{5}{8}$ to $1\frac{1}{4}$	26.00	No. 4 Cutter	$1\frac{1}{4}$ to 3	6.00
No. 1 Cutter	$\frac{5}{8}$ to $1\frac{1}{8}$	3.00	Locking screws	Either Bit	.75
No. 2 Cutter	$1\frac{1}{8}$ to $1\frac{3}{4}$	3.75	Adjusting worms	Either Bit	1.00



Fig. 66 SHIP AUGER, WITH SCREW

L' Hommedieu Pattern

These Ship Augers have a twist varying in length according to size, from 8 inch twist on the 4/16 and 5/16 and 10 inch twist on the 6/16, 7/16 and 8/16, to 12 inch twist on the 9/16 to 1 inch bit and 15 inch twist on larger augers. The overall length exceeds the twist length by about 5 inches.

This tool is fitted with a tang shank as illustrated. The shank has a body of metal sufficient for welding to an iron crank or handle, as is frequently done. The shank may also be used in a wooden handle.

We carry a stock of Ship Augers with screws in all sizes listed, up to and including 4 inch. Regular stock tools $1\frac{3}{4}$ inches and smaller have full polished twist, round and screw. Larger sizes are full polished except that hollow of twist is coated with a black enamel paint.

Prices per Dozen. Sizes in Sixteenths

Size	4	5	6	7	8	9	10	11	12	13	14
Price	\$11.00	11.00	11.00	11.00	11.00	11.00	11.00	12.00	12.00	13.00	13.00
Size	15	16	17	18	19	20	21	22	23	24	25
Price	\$14.50	14.50	16.00	16.00	18.00	18.00	20.00	20.00	23.00	23.00	27.00
Size	26	27	28	29	30	31	32	34	36	38	40
Price	\$27.00	32.00	32.00	38.00	38.00	45.00	45.00	57.00	72.00	86.00	101.00
Size	42	44	46	48	50	52	54	56	58	60	
Price	\$115.00	130.00	144.00	158.00	173.00	187.00	201.00	216.00	231.00	245.00	



Fig. 68 SHIP AUGER, WITHOUT SCREW

Prices per Dozen. Sizes in Sixteenths

Size	4	5	6	7	8	9	10	11	12	13	14
Price	\$13.20	13.20	13.20	13.20	13.20	13.20	13.20	14.40	14.40	15.60	15.60
Size	15	16	17	18	19	20	21	22	23	24	25
Price	\$17.40	17.40	19.20	19.20	21.60	21.60	24.00	24.00	27.60	27.60	32.40
Size	26	27	28	29	30	31	32	34	36	38	40
Price	\$32.40	38.40	38.40	45.60	45.60	54.00	54.00	68.40	86.40	97.20	121.20
Size	42	44	46	48	50	52	54	56	58	60	
Price	\$138.00	156.00	172.80	189.00	207.60	224.40	241.20	259.20	277.21	294.00	

MACHINE WOOD BITS



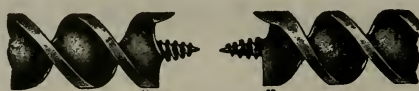
REVISED STANDARD MACHINE BIT LIST

List Prices Per Dozen. Sizes in Sixteenths

For other styles see page 34

Size, 16ths	6-inch Twist	8-inch Twist	10-inch Twist	12-inch Twist	14-inch Twist	Each Extra 2-inch Twist	Size, 16ths	6-inch Twist	8-inch Twist	10-inch Twist	12-inch Twist	14-inch Twist	Each Extra 2-inch Twist
4	\$10.80	\$12.96	\$15.12	\$17.28	.....	.....	25	\$31.50	\$37.80	\$44.10	\$50.40	\$56.70	\$63.00
5	10.80	12.96	15.12	17.28	.....	.....	26	33.00	39.60	46.20	52.80	59.40	66.00
6	10.80	12.96	15.12	17.28	\$19.44	\$2.16	27	34.50	41.40	48.30	55.20	62.10	69.00
7	10.80	12.96	15.12	17.28	19.44	2.16	28	36.00	43.20	50.40	57.60	64.80	72.00
8	10.80	12.96	15.12	17.28	19.44	2.16	29	37.50	45.00	52.50	60.00	67.50	75.00
9	12.00	14.40	16.80	19.20	21.60	2.40	30	39.00	46.80	54.60	62.40	70.20	78.00
10	13.20	15.84	18.48	21.12	23.76	2.64	31	40.50	48.60	56.70	64.80	72.90	81.00
11	14.40	17.28	20.16	23.04	25.92	2.88	32	42.00	50.40	58.80	67.20	75.60	84.00
12	15.60	18.72	21.84	24.96	28.08	3.12	33	43.80	52.56	61.32	70.08	78.84	87.60
13	16.80	20.16	23.52	26.88	30.24	3.36	34	45.60	54.72	63.84	72.96	82.08	91.20
14	18.00	21.60	25.20	28.80	32.40	3.60	35	47.40	56.88	66.36	75.84	85.32	94.80
15	19.20	23.04	26.88	30.72	34.56	3.84	36	49.20	59.04	68.88	78.72	88.56	98.40
16	20.40	24.48	28.56	32.64	36.72	4.08	37	51.00	61.20	71.40	81.60	91.80	102.00
17	21.60	25.92	30.24	34.56	38.88	4.32	38	52.80	63.36	73.92	84.48	95.04	105.60
18	22.80	27.36	31.92	36.48	41.04	4.56	39	54.60	65.52	76.44	87.36	98.28	109.20
19	24.00	28.80	33.60	38.40	43.20	4.80	40	56.40	67.68	78.96	90.24	101.52	112.80
20	25.20	30.24	35.28	40.32	45.36	5.04	42	60.60	72.72	84.84	96.96	109.08	121.20
21	26.40	31.68	36.96	42.24	47.52	5.28	44	64.80	77.76	90.72	103.68	116.64	129.60
22	27.60	33.12	38.64	44.16	49.68	5.52	46	69.00	82.80	96.60	110.40	124.20	138.00
23	28.80	34.56	40.32	46.08	51.84	5.76	48	73.20	87.84	102.48	117.12	131.76	146.40
24	30.00	36.00	42.00	48.00	54.00	6.00							

GENUINE MEPHISTO WOOD BITS



"Mephisto"

Fig. 2400

The only bit made that is honed like a razor, insuring rapid, smooth and even cutting. Made to exact size, of special grade carefully tempered steel. Fully warranted.

Guaranteed to bore in the hardest woods with ease under any condition with or against the grain, and not to clog. Will not tear the wood, but will bore all the way through without splintering, leaving a perfectly smooth hole.

No. 2400. Polished from tip to tip.

Sizes in 16ths of an inch.....	4	5	6	7	8	9	10	11	12
Per dozen	\$4.00	4.00	4.00	4.50	5.00	5.50	6.00	7.00	7.00
Sizes in 16ths of an inch.....	13	14	15	16	18	20	22	24	
Per dozen	\$8.00	8.00	9.00	9.00	10.50	12.00	13.50	15.00	

1 bit in box; ½ dozen in carton.

AUGERS



Fig. 80. Nut Auger



Fig. 84. Boring Machine Auger

LIST OF NO. 89 NUT AUGERS AND NO. 84 BORING MACHINE AUGERS

Prices per Dozen. Sizes in Fraction of Inch

Size, inches.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Price	\$10.00	10.00	10.00	11.00	13.00	15.00
Size, inches.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	2
Price	\$17.00	19.00	21.00	24.00	28.00	32.00
Size, inches.....	$\frac{2}{4}$	$\frac{2}{2}$	$\frac{2}{3}$	3	$\frac{3}{4}$	$\frac{3}{2}$
Price	\$42.00	52.00	72.00	92.00	122.00	152.00

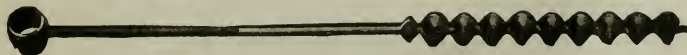


Fig. 97. Rafting Auger

Our Rafting Augers have 12 inch twist and are 30 inches overall. Sizes listed are carried in stock.

LIST OF NO. 97 RAFTING AUGERS

Prices per Dozen. Sizes in Fraction of Inch

Size, inches.....	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{3}$	2	$\frac{2}{4}$	$\frac{2}{2}$
Price	\$32.00	40.00	48.00	56.00	66.00	76.00
Size, inches.....	$\frac{2}{4}$	3	$\frac{3}{4}$	$\frac{3}{2}$	$\frac{3}{4}$	4
Price	\$90.00	105.00	120.00	140.00	160.00	180.00

MACHINE BITS



Fig. 153. Solid Center Machine Bit

Fig. 151. Extension Lip Machine Bit
Jennings PatternFig. 150. Double Spur Machine Bit
Snell Pattern

The Double Spur Machine Bit is the general purpose tool and our principal stock is carried in this pattern, as may be noted by the list given below. The bit is suited for very rapid work in all kinds of wood and requires a minimum amount of power.

The lips and cutting edges are carefully proportioned for rapid, easy, smooth cutting, but so constructed as to give the maximum stock for wear and sharpening. This bit may be run as long as a spur remains, and even after that it may be used as a flat cut bit.

We illustrate this bit with a single screw point, as this is more commonly required. We can furnish it with any practical pitch of single or double screw, or with brad point.

The following sizes by sixteenths are regular stock:

4 in. twist with $\frac{1}{2}$ in. shank from $\frac{3}{16}$ to 1 in.	14 in. twist with $\frac{5}{8}$ in. shank from $\frac{7}{16}$ to 2 in.
5 in. twist with $\frac{1}{2}$ in. shank from $\frac{3}{8}$ to 1 in.	16 in. twist with $\frac{5}{8}$ in. shank from $\frac{7}{16}$ to 2 in.
6 in. twist with $\frac{1}{2}$ in. shank from $\frac{3}{8}$ to 2 in.	8 in. twist with $\frac{3}{4}$ in. shank from $\frac{1}{4}$ to 1 in.
8 in. twist with $\frac{1}{2}$ in. shank from $\frac{1}{4}$ to 2 in.	10 in. twist with $\frac{3}{4}$ in. shank from $\frac{1}{4}$ to 2 in.
10 in. twist with $\frac{1}{2}$ in. shank from $\frac{1}{4}$ to 2 in.	12 in. twist with $\frac{3}{4}$ in. shank from $\frac{1}{4}$ to 2 $\frac{1}{2}$ in.
12 in. twist with $\frac{1}{2}$ in. shank from $\frac{1}{4}$ to 2 in.	14 in. twist with $\frac{3}{4}$ in. shank from $\frac{3}{8}$ to 2 $\frac{1}{2}$ in.
10 in. twist with $\frac{5}{8}$ in. shank from $\frac{3}{8}$ to 2 in.	16 in. twist with $\frac{3}{4}$ in. shank from $\frac{7}{16}$ to 2 in.
12 in. twist with $\frac{5}{8}$ in. shank from $\frac{3}{8}$ to 2 in.	

FOR PRICES SEE NEXT PAGE

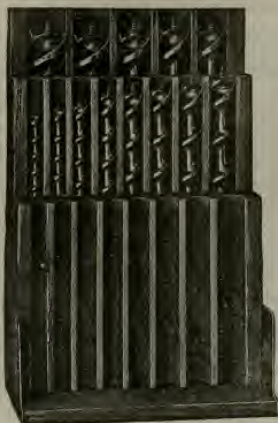
STANDARD MACHINE BIT LIST

List Prices per Dozen. Sizes in Sixteenths

Size 16th	6-inch Twist	8-inch Twist	10-inch Twist	12-inch Twist	14-inch Twist	Each Extra 2-inch Twist
4	\$10.80	\$12.96	\$15.12	\$17.28	.....	.....
5	10.80	12.96	15.12	17.28	.....	.....
6	10.80	12.96	15.12	17.28	\$19.44	\$ 2.16
7	10.80	12.96	15.12	17.28	19.44	2.16
8	10.80	12.96	15.12	17.28	19.44	2.16
9	12.00	14.40	16.80	19.20	21.60	2.40
10	13.20	15.84	18.48	21.12	23.76	2.64
11	14.40	17.28	20.16	23.04	25.92	2.88
12	15.60	18.72	21.84	24.96	28.08	3.12
13	16.80	20.16	23.52	26.88	30.24	3.36
14	18.00	21.60	25.20	28.80	32.40	3.60
15	19.20	23.04	26.88	30.72	34.56	3.84
16	20.40	24.48	28.56	32.64	36.72	4.08
17	21.60	25.92	30.24	34.56	38.88	4.32
18	22.80	27.36	31.92	36.48	41.04	4.56
19	24.00	28.80	33.60	38.40	43.20	4.80
20	25.20	30.24	35.28	40.32	45.36	5.04
21	26.40	31.68	36.96	42.24	47.52	5.28
22	27.60	33.12	38.64	44.16	49.68	5.52
23	28.80	34.56	40.32	46.08	51.84	5.76
24	30.00	36.00	42.00	48.00	54.00	6.00
25	31.50	37.80	44.10	50.40	56.70	6.30
26	33.00	39.60	46.20	52.80	59.40	6.60
27	34.50	41.40	48.30	55.20	62.10	6.90
28	36.00	43.20	50.40	57.60	64.80	7.20
29	37.50	45.00	52.50	60.00	67.50	7.50
30	39.00	46.80	54.60	62.40	70.20	7.80
31	40.50	48.60	56.70	64.80	72.90	8.10
32	42.00	50.40	58.80	67.20	75.60	8.40
33	43.80	52.56	61.32	70.08	78.84	8.76
34	45.60	54.72	63.84	72.96	82.08	9.12
35	47.40	56.88	66.36	75.84	85.32	9.48
36	49.20	59.04	68.88	78.72	88.56	9.84
37	51.00	61.20	71.40	81.60	91.80	10.20
38	52.80	63.36	73.92	84.48	95.04	10.56
39	54.60	65.52	76.44	87.36	98.28	10.92
40	56.40	67.68	78.96	90.24	101.52	11.28
41	58.50	70.20	81.90	93.60	105.30	11.70
42	60.60	72.72	84.84	96.96	109.08	12.12
43	62.70	75.24	87.78	100.32	112.86	12.54
44	64.80	77.76	90.72	103.68	116.64	12.96

We can furnish special lengths and finish to order. Prices on Application.

SOLID CENTER AUGER BIT SETS IN FANCY BOXES



While this illustration shows only our set of 13 No. 22 Solid Center Auger Bits in Handy Box, we also pack sets of 6, 8 and 9 bits in similar box.

LIST OF SOLID CENTER AUGER BIT SETS

Set by quarters.....	11¼	18¾	20½	32½
List price	\$3.00	4.50	4.90	7.50

CHARGE FOR FANCY BOXES TO HOLD ABOVE SETS

The Handy Box. List...	\$0.60	.72	.90	.90
The Hinged Box. List...	.54	.60	.60	.70

AUGER BIT SETS IN CANVAS ROLLS



Set by quarters.....	11¼	18¾	20½	32½
List price	\$3.00	4.50	4.90	7.50
Charge for Canvas Rolls, extra. List.....				\$1.20

WOOD CHISELS



No. 230. Socket Firmer Chisel

With Bevel Edges and Leather Tipped Handle

This No. 230 Socket Firmer Chisel has bevel edges and a leather tipped handle. We give this the same leading position among chisel illustrations that it occupies in all chisel stocks.

The blade of this Chisel measures $6\frac{1}{4}$ inches from cutting bevel to shoulder. Both blade and socket are carefully polished and the edge is sharpened. The handle is of hardwood, nicely turned and highly finished. The tip consists of three layers of well tanned leather, finished and polished in connection with the wood.



No. 236. Socket Firmer Chisel

With Plain Back and Leather Tipped Handle

The No. 236 Socket Firmer Chisel has a blade with plain back and a handle with leather tip. With the full body of metal in the blade and with the leather capped handle for severe service, this tool is preferred where requirements are extreme.

LIST OF NO. 230 and 236 SOCKET FIRMER CHISELS

Prices per Dozen. Sizes in Fraction of Inch

Size, inches	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Price	\$14.00	14.00	14.00	14.00	15.50	16.00
Size, inches	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Price	\$18.00	18.50	20.50	22.00	24.00	25.00

Add for bevel edge, 60c net per dozen

WOOD CHISELS

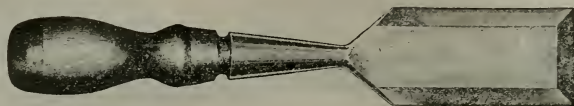


Fig. 200. Socket Butt Chisel

With Bevel Edges and Leather Tipped Handle

LIST OF NO. 200 SOCKET BUTT CHISELS

Prices per dozen. Sizes in fraction of inch

Size, inches	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Price	\$14.00	14.00	14.00	14.00	15.50	16.00
Size, inches	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Price	\$18.00	18.50	20.50	22.00	24.00	25.00

Extra for No. 200 with Bevel Edges 50 cents net per dozen



Fig. 261. Socket Framing Chisel

With Bevel Back and Ring Handle

LIST OF NO. 261 SOCKET FRAMING CHISELS

Prices per dozen. Sizes in fraction of inch

Size, inches	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Price	\$9.00	9.00	9.00	9.50	10.00	10.50
Size, inches	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Price	\$11.00	12.00	12.00	13.00	14.50	16.00

Prices per Set

Set, number of Chisels	6	9	11
Price	\$5.90	8.60	10.80

Extra for No. 261 with bevel edges 90 cents net per dozen



Fig. 290. Socket Slick
With Oval Back and Long Handle

The No. 290 Socket Slick is an extra heavy tool made in large sizes only and designed for the very heaviest duty. The blade is of extra weight with a heavy oval back.

We furnish a maple handle on this chisel, measuring 14 inches long. The blade is 10 inches long, which, with the socket, makes the complete handled tool about 30 inches long overall.

Size inches.....	2½	2¾	3	3½	4
Prices per dozen.....	\$21.00	23.50	23.50	27.50	32.00

Extra for Bevel Edges \$2.00 net per dozen



Fig. 295. Socket Corner Chisel
With Ring Handle

We show this tool with hickory handle fitted with polished ring as best suited for the severe requirements of corner chisels. If desired, we can supply with leather tipped handles at a list increasing \$1.00 per dozen for any size.

The Socket Corner Chisel has blade measuring 8 inches long. This is polished outside and gilded on the inner side of the angle, making a very attractive finish.

Size inches.....	½	¾	¾	¾	1	1½	1¾
Prices per dozen.....	\$16.00	16.00	16.00	17.00	18.25	19.00	20.25



Fig. 330. Socket Firmer Gauge

Size inches.....	¾	¾	¾	¾	¾	¾
Prices per dozen.....	\$10.50	10.50	10.50	11.00	11.50	12.25
Size inches.....	¾	1	1¼	1½	1¾	2
Prices per dozen.....	\$13.25	14.00	15.50	17.25	18.75	21.25

WOOD CHISELS IN SETS



Fig. 230. Set Shows Bevel Edge with Leather Tipped Handles

SETS OF SOCKET FIRMER CHISELS IN ROLLS No. 230

This Leatherette Roll, lined with flannel, is packed with a regular set of six or twelve from our No. 230 line of Socket Firmer Chisels.

List Prices for Chisels Only

	Price
Set of 12 Chisels, containing 1 each $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 inch..	\$18.50
Set of 6 Chisels, containing 1 each $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{2}$ and 2 inch.....	9.30
Add extra for Leatherette Roll, 6 Chisel capacity, net	1.10
Add extra for Leatherette Roll, 12 Chisel capacity, net	1.85
Add extra for bevel edges, per dozen Chisels, net .....	.60

WOOD CHISELS IN SETS



SET OF 12 SOCKET FIRMER CHISELS IN BOX

We here show a Set of twelve No. 230 Bevel Edge Socket Firmer Chisels with leather tipped handles, packed in a fancy Hinged Case.

This box is a finished hardwood case and each chisel is held firmly in place by a spring in connection with the pocket framed in the box.

This is a regular assortment. We also pack regular sets of 8 and 9 Chisels in this style of box.

	Price
Set of 12 Chisels, containing 1 each $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 in. .	\$18.50
Set of 9 Chisels, containing 1 each $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inch.	12.75
Set of 8 Chisels, containing 1 each $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inch.	12.30

List prices for Chisels only, add for box 90c net extra

Add for bevel edges 60c per dozen Chisels net

DRAW KNIVES

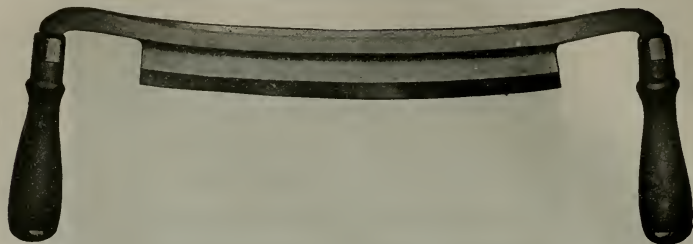


Fig. 600. Razor Blade Draw Knife

Length, inches.....	6	7	8	9	10
Price, per dozen.....	\$13.50	13.50	13.50	14.40	15.60
Length, inches.....	11	12	13	14	16
Price, per dozen.....	\$18.00	18.00	21.00	21.00	24.00

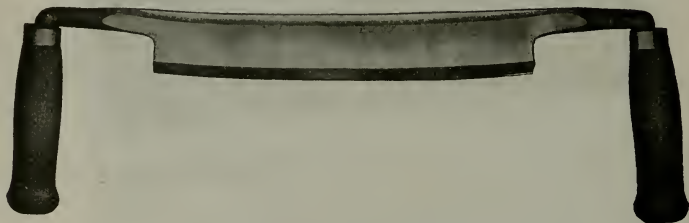


Fig. 625. Heavy Stripping Knife

This blade is 1 3/4 inches wide, of laid steel, and with both the tool steel and the common steel increased to make this heavier section. The handles are made of hardwood, finished natural. They are formed with considerable enlargement near the end to give better grip.

On special order, we furnish an Extra Heavy Stripping Knife with a blade measuring about 2 1/2 inches wide. This knife has proven very popular wherever used for bark peeling.

The blades are full polished and the shanks enameled black. The handles are fitted with heavy steel ferrules, but no caps are required with this handle.

Length, inches.....	8	9	10	11	12	13
Price, per dozen.....	\$14.40	16.20	18.00	19.80	21.60	23.40
Length, inches.....	14	15	16	18	20	....
Price, per dozen.....	\$25.20	27.00	28.80	32.30	36.00	....

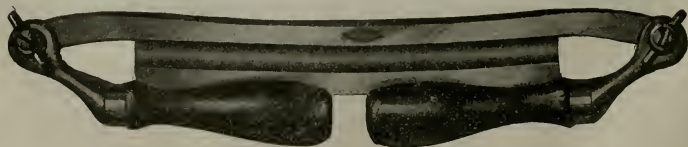


Fig. 635. Folding Handle Draw Knife

Length, inches.....	6	7	8	9	10
Price, per dozen.....	\$18.00	18.00	18.00	19.50	21.00

SCRAPERS AND SPOKE SHAVES

SCRAPERS

HANDLED SCRAPER No. 80



Fig. 80

Has a blade that may be sprung to a slight curve by means of a thumb screw, giving ease of operation and quickness of cut. The handles are raised to protect the user's hands, and pierced so that the tool can be hung up out of the way. Body and handles cast in one piece.

No. 80, 11 inches long, 2 1/2 inch blade. Japanned. Weight each, 1 1/2 lbs. . . . per dozen \$12.00
Packed 1 in Box

ADJUSTABLE SCRAPER No. 82

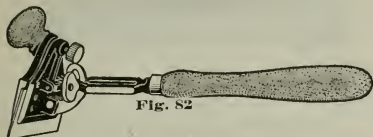


Fig. 82

Has an adjustable single handle which can be tilted to give the blade any angle desired. Special blades of different forms and widths can be securely held in any position required, thus permitting the tool to be worked in many places inaccessible to other Scrapers. Handle and knob of hardwood.

No. 82, 14 1/2 inches long, 3 inch blade. Japanned. Weight each 1 1/2 lbs. . . . per dozen \$12.60
Packed 1 in Box

BOX SCRAPER No. 70



Fig. 70

For removing stencils and other markings from the surface of boxes, floors, etc. It has a large handle, 13 inches in length, hinged to the malleable iron bottom, making it possible to work the tool from any position above the surface. The face of the bottom and the edge of the cutter are slightly curved away from the center, allowing the user to scrape clean any uneven surface. Handle is made of maple.

No. 70, 13 inches long, 2 inch cutter. Japanned. Weight package, 6 lbs. . . . per dozen \$6.00
Packed 1/2 Dozen in Box

VENEER SCRAPER

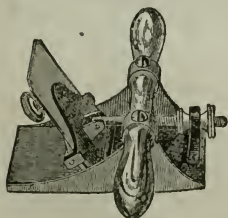


Fig. 12

No. 12, 8 in. adjustable, 3 in. cutter, rosewood handles each \$2.25
For scraping and finishing veneers and cabinet work. Also adapted for scraping off old paint and glue.

FOR PAINT, BRUSHES AND ENAMELS, SEE INDEX

DOUBLE IRON, IMPROVED



Fig. 51

They have a cutter and cap iron, fastened by a thumb screw, in such a manner as to bring an even pressure on the cutter edge, and at the same time allow adjustment without the use of a screwdriver.

No. 51, Raised handle, 10 inches long, 2 1/2 inch cutter. Wt., package, 3 1/2 lbs. . . . per dozen \$3.50

No. 52, Straight handle, 10 inches long, 2 1/2 inch cutter. Wt., package, 3 1/2 lbs. . . . per dozen 3.50

Packed 1/2 Dozen in Box

ADJUSTABLE SPOKE SHAVES



Fig. 151

These new and improved Spoke Shaves have a lever cap fastening the cutter in such a manner as to bring an even pressure on the cutting edge.

The important feature is that the cutter can be quickly adjusted both endwise and sideways by means of the adjusting screws which engage the slots near the end.

Made in two styles—one with raised and the other with straight handles.

No. 151, Raised handle, 10 inches long, 2 1/2 inch cutter. per dozen \$6.00

No. 152, Straight handle, 10 inches long, 2 1/2 inch cutter. per dozen 6.00

TWO CUTTER



Fig. 60

Has two cutters and separate cutter seats, one hollow and one straight. The two forms of cutters in one tool make it a very handy Spoke Shave.

No. 60, Straight handle, 10 inches long, 1 1/2 inch cutter. Weight, 4 1/2 lbs. . . . per dozen \$4.50

Packed 1/2 Dozen in Box

UNIVERSAL



Fig. 67

This will be found to be a very handy tool. The handles are detachable, and either one can be screwed into the top of the stock, enabling the user to work into corners or panels, as no other Spoke Shave can do.

A recent improvement is, that one handle has a right and the other a left hand thread, and the proper sockets to receive them are threaded accordingly. This prevents any possibility of the handles working loose when the tool is in use. The handles as well as the sockets in which they belong are lettered to avoid mistakes. Two detachable bottoms are furnished, one for straight and the other for circular work. A movable width gauge allows the tool to be used in rabbeting. All metal parts are nickel plated and the handles are made of rosewood. Extra cutters \$2.00 per dozen.

No. 67, Rosewood handle, 9 1/4 inches long, 1 1/2 inch cutter. Weight, 3 1/2 lbs. . . . per dozen \$18.00

Packed 1 in Box

PLANES



Fig. 4



Fig. 6



Fig. 7C

"BAILEY" ADJUSTABLE IRON PLANES

The Planes described below, generally known as Bench Planes, are divided into four classes, namely: Smooth, Jack, Fore and Jointer.

A Smooth Plane is for finishing or smoothing off flat surfaces. Where the uneven spots are of slight area, its short length will permit it to locate these irregularities, leaving the work with a smooth surface when finished.

A Jack Plane is used to true up the edges of a board in the rough and prepare it for the Fore or Jointer.

A Fore Plane is simply a short Jointer, and being lighter, is preferred by some workmen to the longer plane.

A Jointer is a finishing Plane for large surfaces and is invariably used to true up the edges of boards so that they can be closely fitted or joined together.

"Bailey" Iron Planes have been in use for nearly fifty years and are the recognized standard for Planes of this type. While retaining all the original features, many valuable improvements in construction have been added from time to time. Only the finest materials and the best workmanship are used in their manufacture.

The handle and knob are made of highly finished, thoroughly seasoned rosewood.

Planes with bottoms either flat or corrugated (see Fig. 7C) furnished as desired. The number with a "C" designates Corrugated Bottom.

No. 4 or 4C. Smooth. 9 inches long. 2 inch cutter. Weight, 3½ lbs.....	each	\$2.20
No. 5 or 5C. Jack. 14 inches long. 2 inch cutter. Weight, 4½ lbs.....	each	2.50
No. 6 or 6C. Fore. 18 inches long. 2½ inch cutter. Weight, 7½ lbs.....	each	3.25
No. 7 or 7C. Jointer. 22 inches long. 2½ inch cutter. Weight, 8½ lbs.....	each	3.75
Packed 1 in Box		



Fig. 10½

CARRIAGE MAKERS' RABBIT PLANES

Especially adapted for the heavy framing required in mining work, for carriage or wagon building, or any work of similar nature.

No. 10½ or 10½C. 9 inches long, 2½ inch cutter. Weight, 3 lbs.....	each	\$2.50
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FOR PLUMB BOBS AND LEVELS, SEE INDEX



Fig. 24

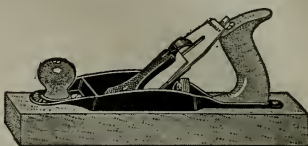


Fig. 27

"BAILEY" WOOD PLANES

Every carpenter needs two or more Wood Planes in his kit, for rough outside work.

"Bailey" Wood Planes supply the demand for a Wood Plane of superior quality. The bottom, handle, and knob are made from selected and well seasoned beech. The cutters are the regular "Bailey" type and are adjustable both endwise and sidewise.

No. 21. Smooth. 7 inches long. 1½ inch cutter. Weight, 2½ lbs.....	each	\$1.50
No. 24. Smooth. 8 inches long. 2 inch cutter. Weight, 2½ lbs.....	each	1.50
No. 27. Jack. 15 inches long. 2½ inch cutter. Weight, 4 lbs.....	each	1.90

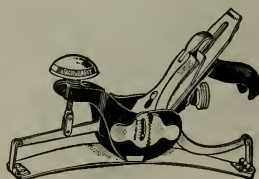


Fig. 113

CIRCULAR PLANES

These Planes have flexible steel faces, which can be accurately adjusted for planing the inside or outside of circles. The cutters are the same as in the "Bailey" Planes.

No. 113 is the original design for this class of tools, and has been well known for many years. The face is fastened at its center to the Plane body, and adjusted at the ends by means of a screw and levers.

No. 113. Japanned. 10 inches long. 1½ inch cutter. Weight, 3½ lbs.....	each	\$3.00
Packed 1 in Box		

BLOCK PLANES



Fig. 9 1/2 and 16



Fig. 18-19


Fig. 60-60 1/2
Low Angle Block

"BAILEY" ADJUSTABLE BLOCK PLANES

A Block Plane was first made to meet the demand for a plane which could be easily held in one hand while planing across the grain, particularly the ends of boards, etc. This latter work many carpenters call "blocking in," hence the name "Block" Plane.

Nos. 18 and 19 are distinctive in the method of fastening the cutter. These planes are now fitted with a new and patented form of lever or cap, which being entirely of steel, makes it practically indestructible. This new knuckle joint permits of great leverage, consequently the lever can be placed in position or removed with very little effort—a great improvement over the old form of knuckle joint lever.

No.	Length, Inches	Cutter, Inches	Trimmings	Weight, lbs.	Each
9 1/2	6	1 1/4	Japan	1 1/2	\$1.10
15	7	1 1/4	Japan	1 1/2	1.20
16	6	1 1/4	Nickel	1 1/2	1.25
17	7	1 1/4	Nickel	1 1/2	1.35
9 3/4	6	1 1/4	Japan, rosewood handle	1 1/2	1.30
15 1/2	6	1 1/4	Japan, rosewood handle	1 1/2	1.40
18	6	1 1/4	Nickel, knuckle joint	1 1/2	1.30
19	7	1 1/4	Nickel, knuckle joint	1 1/2	1.40

Packed 1 in Box.

LOW-ANGLE BLOCK PLANES

These planes are designed to meet the demand for block planes having the cutters lying at a still lower angle than 20 degrees.

In the Low-Angle Planes the cutter rests on its seat at an angle of only 12 degrees. This angle permits of great ease in working across the grain on hard woods.

No.	Length, Inches	Cutter, Inches	Trimmings	Weight, lbs.	Each
65	7	1 1/4	Nickel, knuckle joint	1 1/2	\$1.35
65 1/2	7	1 1/4	Japan	1 1/2	1.20
66	6	1 1/4	Nickel	1 1/2	1.25
60 1/2	6	1 1/4	Japan	1 1/2	1.10
62	14	2	Japan	3 1/2	2.85
61	6	1 1/4	Nickel	1 1/2	1.10
63	7	1 1/4	Nickel	1 1/2	1.30

Packed 1 in Box.


Fig. 130
Double End Block

Fig. 220
Adjustable Block

Fig. 110
Non-Adjustable Block

DOUBLE-END BLOCK PLANES

Has two slots and two cutter seats, the center seat and slot to be used for ordinary block plane work, the other slot and seat for use when it is desired to work same as a bull nose plane. The plane has a hardwood knob. No. 130. 8 in. long, 1 1/4 in. cutter, Japan trimmings, packed 1 in box, weight 1 1/2 lbs. each \$0.75

ADJUSTABLE BLOCK PLANES

No. 203 is a new plane designed especially for manual training use. The cutter is secured in its place by a lever fastened with a cam. It is adjustable endwise by means of the thumb screw shown at the rear of the plane. The knob is of rosewood and serves as a finger rest.

No. 220 is in many ways better adapted for average use than any of the cheaper block planes made. The cutter is made of high grade steel, is fastened by a lever and cam, and is adjustable endwise by a screw adjustment operated from the rear of the plane. The knob or finger rest on the front of the plane is made of rosewood.

No. 103 is for light work. The cutter is adjustable endwise, the form of adjustment being known as the lever adjustment. The bottom is ground true and the sides neatly japanned.

No. 120 is similar in design to the No. 103, having the same form of cutter adjustment and cutter fastening device. However, in this plane the sides are ground, care being taken to have them parallel and, instead of the iron boss on the front of the plane, it is fitted with a rosewood knob which forms a convenient finger rest.

No.	Length, Inches	Cutter, Inches	Adjustment	Weight, lbs.	Each
203	5 1/2	1 1/4	Screw	1 1/2	\$0.85
220	7 1/2	1 1/4	Screw	1 1/2	.75
103	5 1/2	1 1/4	Lever	1 1/2	.55
120	7 1/2	1 1/4	Lever	1 1/2	.75

Packed 1 in Box.

NON-ADJUSTABLE BLOCK PLANES

No. 101, only 3 1/4 inches in length, can be used for a variety of purposes. It is a very handy little plane for household use and many mechanics carry one in their kits for odds and ends of light work.

No. 100 is the same in all respects as the No. 101 except that it has an iron handle which just fits nicely into the palm of the hand, insuring the workman a firmer grip than is possible with the No. 101.

No. 102 is a light, serviceable plane, 5 1/2 inches long. The bottom is ground and the sides japanned.

No. 110 is the most popular of all the non-adjustable block planes. Both the bottoms and sides are ground and in place of the boss cast on the front for a finger rest, it has an apple-wood knob, stained black.

For those desiring a plane for ordinary work that does not require that the tool be frequently adjusted, we strongly recommend this line.

No.	Length, Inches	Cutter, Inches	Package	Weight, lbs.	Each
101	3 1/4	1	Handled	1 1/2	\$0.25
100	3 1/4	1	1 only	1 1/2	.25
102	5 1/2	1 1/4	1 only	1 1/2	.40
110	7 1/2	1 1/4	1 only	1 1/2	.65

MISCELLANEOUS PLANES

BULL NOSE RABBIT PLANE



Fig. 75

Will be found very useful for working close up into corners or other difficult places. The mouth can be adjusted for different widths by means of the set screw on top of the plane.

No. 75. 4 inches long, 1 inch cutter, Japan trimmings. each \$0.40
Weight $\frac{3}{4}$ lb. Packed 1 in Box

DOUBLE END MATCH PLANES

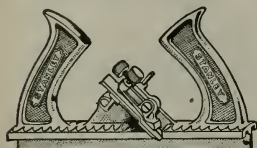
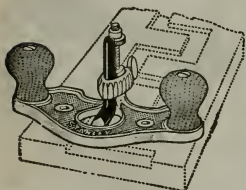


Fig. 146

for end. The Planes are nickel plated and have iron handles cast with the body.

No. 146. Cuts $\frac{1}{2}$ inch groove, on boards $\frac{3}{4}$ inch to $\frac{1}{2}$ inch centers on $\frac{1}{2}$ inch, weight $1\frac{1}{2}$ lbs. each \$2.20
No. 147. Cuts $\frac{3}{16}$ inch groove, on boards $\frac{1}{2}$ inch to $\frac{3}{4}$ inch centers on $\frac{1}{2}$ inch, weight $1\frac{1}{4}$ lbs. each 2.20
No. 148. Cuts $\frac{1}{4}$ inch groove, on boards $\frac{1}{2}$ inch to 1 inch centers on $\frac{1}{2}$ inch, weight $2\frac{1}{2}$ lbs. each 2.20
Packed 1 in Box

ROUTER PLANES



of the chip, and a second attachment for closing the throat for use on narrow surfaces. The bottoms of both styles are designed so that an extra wooden bottom of any size desired can be screwed on, enabling the user to router on large openings.

A $\frac{1}{4}$ and $\frac{1}{2}$ inch cutter are furnished with each Plane. Cutters have screw adjustment and can be held as shown in illustrations, or on the back of the cutter post, for bull-nose work.

No. 71. $7\frac{1}{2}$ inches long. Open throat. Nickel plated. Weight, $2\frac{1}{2}$ lbs. each \$2.05
No. 71 $\frac{1}{2}$. $7\frac{1}{2}$ inches long. Closed throat. Nickel plated. Weight, $2\frac{1}{2}$ lbs. each 1.65
Packed 1 in Box

SKEW CUTTER FILLETSTER AND RABBIT PLANE



Fig. 289

of the cut. Remove arms and fence, and a Skew Cutter Rabbit Plane is obtained.

No. 289. $8\frac{1}{2}$ inches long. $1\frac{1}{4}$ inch cutter. Japanned. Weight, $3\frac{1}{4}$ lbs. each \$1.75
Packed 1 in Box

RABBIT AND FILLETSTER PLANE

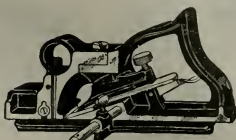


Fig. 278

attached to either side, the Plane is suitable for either right or left hand work. The front part of the Plane can be easily detached, thus providing a bull-nose Plane for working close up into corners or other difficult places. The cutter is adjustable endwise.

No. 278. $6\frac{1}{2}$ inches long. 1 inch cutter. Weight, 2 lbs. each \$1.75
Packed 1 in Box

DUPLEX, FILLETSTER AND RABBIT PLANE

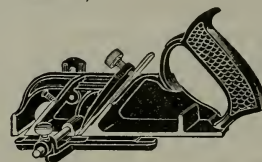


Fig. 78

No. 78. $8\frac{1}{2}$ inches long. $1\frac{1}{4}$ inch cutter. Japanned. Weight, 3 lbs. each \$1.65
Packed 1 in Box

BELT MAKERS' PLANE



Fig. 11

the back of the Plane. Hardwood handle.

No. 11. $5\frac{1}{2}$ inches long. $2\frac{1}{2}$ inch cutter. Japanned. Weight, $3\frac{1}{2}$ lbs. each \$2.20
Packed 1 in Box

STANLEY JOINTER GAUGE FOR IRON PLANES



Fig. 386

It may be attached to either side of the Plane making it equally adaptable for right or left hand work.

All metal parts are nickel plated.
No. 386. 1 only in box. Weight, $2\frac{1}{4}$ lbs. each \$1.75

The sides and bottom being square with each other, the Plane will lie perfectly flat on either side. It has an adjustable fence which slides under the bottom, regulating the width of the cut. It is fitted with two spurs, one on each side, for working across the grain—also an adjustable depth gauge. As both the fence and the depth gauge can be

This Plane has two seats for the cutter, one for regular work and the other where a bull-nose is required. It has a spur and a removable depth gauge. The adjustable fence can be used on either side and slides under the bottom, regulating the width of the cut. To work same as a rabbit plane, remove fence and arms.

A Plane designed for chamfering down the ends or laps of a belt before fastening together. Plane is fitted with adjustable throat, by means of which a wide or narrow opening may be given to the mouth, or slot, for the cutter. Cutter is adjustable endwise by means of the screw shown at

For use in connection with all sizes of Iron Jack or Jointer Planes.

To enable the workman to plane bevels of any angle between 30 and 90 degrees, or to square up the edges of boards with extreme accuracy.

BORING TOOLS AND ATTACHMENTS

BRIDGE AUGERS

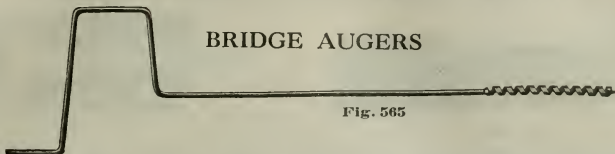


Fig. 565

For railroad construction and heavy bridge work. We will weld handles of any size desired to bits with or without starting screws as desired. Ship augers are generally used for this purpose, but we can furnish handles welded to any kind of a bit you may have need for. These are welded in our own shop, and to order only. Prices upon application. When ordering state length of handle and style of bit wanted. Always allow one day extra for the welding of these handles to bits.

AUGER HANDLES



Fig. 5651

Hickory.....per dozen \$0.70

PRATT'S PATENT AUGER HANDLE



Fig. 5652

Stout ash wood handle.
Steel band, three inches long, split longitudinally, opens to admit all sizes and shapes of auger shanks, excepting largest sizes of ship augers. Center augers correctly.

Nos.	1	2
Length, inches.....	14	17
Weight, per dozen, lbs.....	16	18
Price, per dozen.....	\$7.60	\$8.00

Packed ½ dozen in a pasteboard box.

AUGER HANDLE



Fig. 03

No. 03. Body casting malleable iron; screw steel; handles ash. A light, strong handle. Length, 16 inches. Weight, per dozen, 18 lbs.....per dozen \$7.00

RATCHET AUGER HANDLE



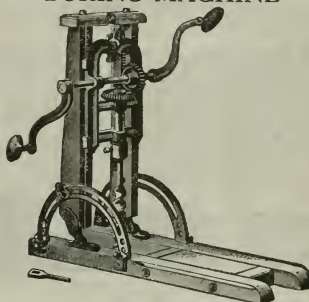
Fig. 5654

Ash wood and metal parts nicked. Chuck jaws admit almost all sizes of bit stock and auger shanks.

Detachable handle upon which wood revolves. Ratchet works either to right or left or may be locked so that the tool may be used without ratchet. Length, 15 inches.

Price, per dozen.....\$32.00

BORING MACHINE



This machine is carefully made and will render accurate service. The rack is strong and will not slip. Upright wood frame; adjustable depth gauge; self withdrawing auger. Weight about 35 lbs.

Price, without augers.....\$6.20

BERGMAN IMPROVED CROSS BORING TOOL

WITH SLIDING FOOTREST



A tool well adapted for boat builders' use. For boring limber holes and many other purposes. Uses regular auger bits. Nickel plated finish.

Price, each.....\$5.00

FOR SHIP AUGERS, BORING AND MACHINE AUGERS, SEE INDEX

HOLLOW HANDLE TOOL SETS



Fig. 300

No. 300. An exceptionally strong, well made, well finished Tool Set. The illustration shows same about two-fifths actual size.

Handle is of cocobolo, highly polished; screw cap which covers the recess containing the tools is fitted with a steel strike plate. Jaws are case-hardened, have a gun metal finish, and are held open by a spring. The chuck body is of large diameter, well threaded, and machined to receive the jaws. The shell is extra heavy, carefully knurled, and nickel plated.

With each handle, 10 tools are furnished as follows: 1 each gimlet, file, saw, gouge, chisel, reamer, brad awl, scratch awl, and 2 screwdrivers. All are made of special tool steel, hardened, tempered and polished, and are approximately 4 inches long.

An extra saw 6 3/4 inches long is furnished if desired, at \$0.60 per dozen extra.
No. 300. Cocobolo handle, polished, length over all 7 1/2 inches.....per dozen \$24.00
 Packed 1 in Box



Fig. 301

No. 301. This Tool Set is similar in size and general design to the above set, although there is no strike plate in the screw cap on the end of the handle. The chuck body is of less diameter, consequently lighter, and the jaws are of malleable iron and are permanently secured in the chuck body. The shells are knurled, and the shells, jaws and ferrules are nickel plated.

With each handle, 8 tools are furnished as follows: 1 each gimlet, file, saw, gouge, chisel, reamer, and 2 screwdrivers. All are made of special tool steel, hardened, tempered and polished, and are approximately 4 inches long.

An extra saw 6 3/4 inches long is furnished if desired, at \$0.60 per dozen extra.
No. 301. Cocobolo handle, polished, length over all 7 1/2 inches.....per dozen \$15.00
 Packed 1/2 Dozen in Box



Fig. 303

No. 303. This number is a good serviceable set, though not so large and with smaller tools than the numbers described above. The tools are contained in the handle and are protected by a screw cap. The illustration shows same about two-fifths actual size.

The jaws are of malleable iron and permanently secured in the chuck body.

The tools are held in the jaws by means of a malleable iron wing nut, and the nut, jaws and ferrule are nickel plated.

With each handle, 10 tools are furnished as follows: 1 each gimlet, gouge, chisel, scratch awl, screwdriver, tack puller and 4 assorted brad awls, hardened, tempered and with polished tips. They are approximately 2 1/2 inches long.

No. 303. Cocobolo handle, polished, length over all 7 1/2 inches.....per dozen \$0.00
 Packed 1/2 Dozen in Box

FOR WOOD SCREWS, STOVE BOLTS



Fig. 8

AUTOMATIC STAR POCKET BORER

Handsomely knurled and nicked steel. May be compressed into convenient size for the pocket. Magazine handle containing 8 drill points ranging from 1/16 to 11/64 inch in diameter, and a screw-driver bit. Has a device for releasing a bit from the handle without disturbing the others. Screw-driver can be used when tool is compressed. Chuck has positive grip.

Length extended, 7 1/4 inches; compressed, 4 1/2 inches. Weight per dozen in pasteboard boxes, 8 1/4 lbs.

List price per dozen.....\$23.00



Fig. 180

AUTOMATIC BORING TOOL

Handsomely all-steel, knurled and nickel plated handle. Has same sized drills as outfit listed above; each in a separate cell in handle, which can be removed without disturbing the other drills; number and size stamped on the handle over the corresponding cell. Chuck has positive grip. Weight per dozen, 8 lbs; length, 10 1/2 inches. Packed one in pasteboard box.

List price per dozen.....\$19.75

COUNTER SINKS



Fig. 562. For Wood



Fig. 562A. For Brass



Fig. 562B. For Iron

No. 562. For wood.	List price.....per dozen	\$2.00
No. 562A. For brass.	List price.....	" 2.00
No. 562B. For iron.	List price.....	" 2.00

TIMBER SCRIBES

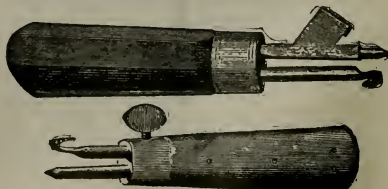


Fig. 563

Small size.....	each	\$1.00
Large size.....	"	1.20

AND SCREW HOOKS, SEE INDEX

SCREW DRIVERS

"YANKEE" SPIRAL RATCHET SCREWDRIVERS

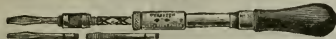


Fig. 30

Fig. 30. The standard size. Drives or draws screws by pushing on handle or by ratchet movement of handle. Can be made rigid as an ordinary screw driver by an ingenious locking device when closed. Packed one only in paper box. Weight per dozen, in paper boxes 13 lbs. 13 oz.

Priceeach \$1.50

Fig. 130. This is the regular pattern Fig. 30 with a spring added in handle, which causes the handle to come back for the next push in driving screws in or out. It is a "quick return" and more rapid as well as convenient in practical use, than pulling the handle back. Extreme length with bit in chuck, 20½ inches extended. Closed the extreme length with bit in chuck is 15 inches. Packed one only in paper box. Weight per dozen in paper boxes, 14 lbs. 8 oz.

Priceeach \$2.00



Fig. 31

Fig. 31. Same design as Fig. 30, but is made considerably heavier and stronger throughout, for use in car shops, etc., where heavy screws are required to be driven or drawn. Three bits of different widths are included with each tool. The extreme length of tool with bit in chuck is 17½ inches when closed, and 26½ inches when extended. Packed only one in paper box. Weight per dozen, in paper boxes, 20 lbs. 8 oz.

Priceeach \$2.35

Fig. 131. The regular Fig. 31 with a spring added in handle, which causes the handle to come back for the next push in driving screws in or out. Extreme length of tool with bit in chuck, 23 inches extended. Can be closed and locked with the milled collar in front of shifter case if desired. Extreme length closed, with bit in chuck, 19½ inches. Packed one only in paper box. Weight per dozen, in paper boxes, 24 lbs. 8 oz.

Priceeach \$2.65



Fig. 35

Fig. 35. Intended for electrical workers, cabinet makers, carpenters and mechanics having a large number of small screws to drive, and where a lighter tool will be much more sensitive and convenient than the standard pattern or Fig. 30. Small enough to be conveniently carried in the pocket, measuring 7 inches long when closed (without bit) and weighing complete less than 7 ounces. The bits are straight, so they can be used to drive screws through holes in insulators, etc., where the flattened blades will not pass through holes. Extra long bits can be supplied for this tool. The length of tool with bit in chuck is 9½ inches when closed and 12½ inches when extended. Packed one only in paper box. Weight per dozen, in paper box, 6 lbs. 5 oz.

Priceeach \$1.35

Fig. 135. Same as Fig. 35, with spring in handle. Extreme length closed, with bit in chuck, 10 inches. Extreme length extended, with bit in chuck, 13½ inches. Packed one only in paper box. Weight per dozen, in paper boxes, 7 lbs. 8 oz.

Priceeach \$1.60



For Fig. 35. Size 1.per doz. \$3.75

For Fig. 30. Size 2." 7.50

For Fig. 31. Size 3." 7.50

Fig. 30D COUNTERSINKS

For Fig. 35. Size 1.per doz. \$1.75

For Fig. 30. Size 2." 1.75

For Fig. 31. Size 3." 1.75

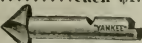


Fig. 30D

AUTOMATIC DRILL



Fig. 41

Made of steel and brass, nickel plated and buffed. Has eight drill points, ¼ to 1½ inch, which are in plain sight when magazine is open. During the return movement of handle the drill point revolves backward to clear chips, etc. Entire length of tool, inclusive of drill point, 11½ inches. Packed one only in paper box. Weight per dozen, in paper box, 7 lbs. 13 oz.

Priceeach \$1.60

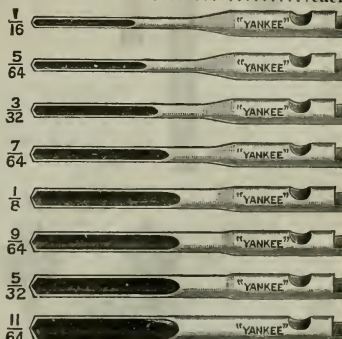
AUTOMATIC DRILL With Adjustable Tension



Fig. 44

In this drill the cap on top of drill has a screw attached to it, by revolving which the spring is made longer or shorter, and as a result weaker or stronger, to suit work in hand and save breakage of drill points. The spring is held at any desired tension by a small bolt engaging in cap and operated by the small knob on side of handle. Has eight drill points, ¼ to 1½ inch, in magazine in handle, arranged to show all in plain sight. Made of steel and brass, nickel plated and buffed. Entire length of tool, inclusive of drill points, 11½ inches. Packed one only in paper box. Weight per dozen, in paper box, 9 lbs.

Priceeach \$1.85



Cut shows actual size drill points for Nos. 41 and 44. Extra Sets.per set \$0.55

RATCHET SCREW DRIVER Right and Left Hand, and Rigid



Fig. 15

Made to meet a demand for a light blade screw driver for small screws in electric work, etc. It has on its blade a knurled washer, permitting turning the blade with finger and thumb. In all sizes named below the blade is ½ inch diameter, and handles are same, the only difference being in the length of the blades. Packed one-half dozen in box.

Sizes Length of Blade, in.	Entire Length, in.	Weight per doz. in Paper Box	Price each
2	4½	1 lb. 7 oz.	\$0.40
3	5½	1 lb. 8 oz.	.45
4	7½	1 lb. 11 oz.	.50
5	9½	1 lb. 13 oz.	.55
6	11½	2 lb. 2 oz.	.60
8	13½	2 lb. 5 oz.	.65

STEEL SQUARES—PLUMB BOBS



Fig. 100. Nickel Steel Square

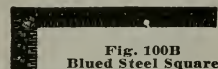
Fig. 100B
Blued Steel Square

Fig. 569

TWO FOOT SQUARES

Body, 24x2 inches. Tongue 16 or 18x1½ inches. Graduations, 1/8, 1/4, 1/2, 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2.

No. 100. Polishedper doz. \$21.00

No. 100B. Blued " 23.50

Body, 24x2 inches. Tongue, 16 or 18x1½ inches. Graduations, 1/8, 1/4, 1/2, 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2.

No. 3. Polishedper doz. \$17.00

No. 3B. Blued " 19.50

Body, 24x2 inches. Tongue, 16 or 18x1½ inches. Graduations, 1/8, 1/4, 1/2, 3/4, 1, 1 1/4, 1 1/2, 1 3/4, 2.

No. 14 line has Essex board measure.

No. 14. Polishedper doz. \$15.00

No. 14B. Blued " 17.50

Packed ¼ dozen in a box.

THE STANDARD TAKE DOWN SQUARE

No. 569. Space occupied 24x24 inches. Solid heel, increasing strength. Smooth sliding fit of tongue, avoiding wear that comes when tongue is forced in.

Tongue cannot drop out or slip, is held by locking cam, securely fastened in square.

Cam is easily turned by inserting in slot any coin or flat tool. No springs to break or get out of order. In ease of operating, in quality and accuracy it has no equal. Oxidized blue and yellow markings.

Each\$3.00

PLUMB BOBS



Fig. 5



Fig. 1



Fig. 2



Figs. 00 and 0

No. 1. Weight, 9 oz.....each \$0.13

No. 2. Weight, 9½ oz..... " .14

No. 00. Weight, 18 oz..... " .25

No. 0. Weight, 42 oz..... " .42

SCREW TOP PLUMB BOB

No. 2. Cast brass, screw top, steel pointed; weight, 6½ oz. each.....per dozen \$5.00

No. 3. Cast brass, screw top, steel pointed; weight, 12 oz. each.....per dozen 7.50

No. 16. Cast brass, screw top, steel pointed; weight 16 oz. each.....per dozen 8.50



Fig. 16



Fig. 6

ADJUSTABLE PLUMB BOBS

These Plumb Bobs are constructed with a reel at the upper end, upon which the line may be kept; and by dropping the bob with a slight jerk while the ring is held in the hand, any desired length of line may be reeled off. A suitable length of line comes already reeled on each Plumb Bob.

Each

No. 1. Small, bronze metal, with steel point..\$1.50

No. 2. Large, bronze metal, with steel point.. 1.75

No. 5. Large, iron, with steel point..... 1.00

MILLWRIGHTS' PLUMB BOBS

No.	Diameter inches	Weight	Price, each
00	1 5/8	5/8 lb.	\$1.50
0	1 3/4	1 lb.	1.50
1/2	2 1/8	1 lb. 6 oz.	2.00
1	2 3/8	2 lbs.	2.50
2	2 1/2	2 lbs. 4 oz.	2.75
3	2 5/8	2 lbs. 10 oz.	3.00
4	2 3/4	3 lbs. 2 oz.	3.25
5	2 7/8	3 lbs. 8 oz.	3.50
6	3	4 lbs. 4 oz.	4.00

FOR OTHER CARPENTER AND MASON TOOLS, SEE INDEX

TRY AND MITRE SQUARES

ROSEWOOD HANDLE TRY SQUARE

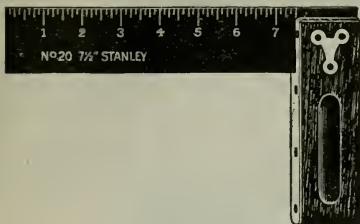


Fig. 20

Square inside and out; the edges of the blade are machined to insure accuracy. Regularly graduated in 8ths of inches, but can be graduated in Metric, if so ordered, without extra charge. The inside of the handles have a brass face plate securely fastened with screws. The 15, 16 and 18 inch sizes have a rest in the handle. The blade has a blued finish.

No. 20

Blade inches	Handle inches		Package		Per dozen
			Doz	Wt. lbs.	
3	2 7/8	.....	1 1/2	3 3/4	\$ 2.35
4	3 1/2	.....	1 1/2	1 1/2	2.52
4 1/2	3 1/2	.....	1 1/2	1 1/8	2.70
5	3 1/2	.....	1 1/2	1 3/4	2.88
6	4 1/2	.....	2	2	3.60
7	5 1/2	.....	2 1/2	2 1/2	4.72
7 1/2	5 3/8	.....	2 1/2	2 7/8	4.15
8	5 3/8	.....	3 1/2	3 1/2	4.25
9	6	.....	3 1/2	3 5/8	5.10
10	6	.....	3 1/2	3 3/4	5.50
12	7	.....	4 1/2	4 3/4	6.70
14	7	.....	5	5	7.80
15	8 1/4	Handle Rest	5 1/2	6 5/8	9.00
16	8 1/4	Handle Rest	7	7	10.56
18	9 3/4	Handle Rest	7 1/2	7 3/4	11.40

ADJUSTABLE TRY AND MITRE SQUARE

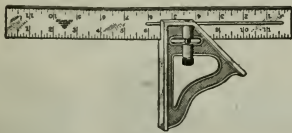


Fig. 21

One of the handiest tools in a Carpenter's Kit. Especially useful for doing short work about windows, doors, etc., or in putting on butts or locks.

The blade is adjustable and as it can be reversed, provides any size of try or mitre square within the capacity of the tool. In reversing, it is not necessary to remove the blade from the handle, consequently the tool is always assembled and ready for use.

The locking device is such as to insure the blade being firmly and accurately secured at any point desired. The edges of the blade are machined, graduated in 8ths, 16ths, and 32ds of inches, and the tool is square inside and out.

It is also an excellent depth and marking gauge.

Both handle and blade are nickel plated. Made in three sizes.

No. 21

6 inch blade, weight 3/4 lb.....	per doz.	\$6.60
9 inch blade, weight 1 1/4 lb.....	"	7.80
12 inch blade, weight 1 3/4 lb.....	"	9.25

FOR STARRETT'S SQUARES AND BEVELS, SEE INDEX

TRY SQUARES

Iron Handle

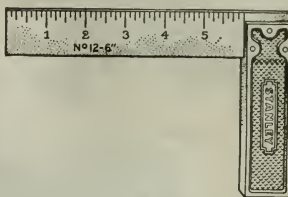


Fig. 12

Both edges and the ends of the handles are machined. The slots for the blades are accurately sawed, and the blades securely fastened in same by means of three large rivets. Both handles and blades are nickel plated.

The blades are made of high grade steel. They are regularly graduated in eighths of inches, but, if desired, can be graduated in Metric without additional charge.

They are made in six sizes, from 2 to 12 inch blades, with proportionate size handles.

No. 12

Nickel Plated

Blade inches	Handle inches	Package		Per dozen
		Dozen	Wt. lbs.	
2	2 1/2	1 1/2	7/8	\$ 2.80
4	3 1/8	1 1/2	1 7/8	3.40
6	4 3/8	1 1/2	2 1/4	3.95
8	5 1/4	1 1/2	4 1/8	5.00
10	6 5/8	1 1/2	5 7/8	6.40
12	8	1 1/2	8	7.50

SLIDING T BEVELS

Rosewood Handle



Fig. 25

The bevel blade can be firmly secured by moving the lever with the thumb of the hand which grasps the handle, thus leaving free the other hand of the workman.

The edges of the steel blade are machined and the entire blade given a handsome blued finish.

No. 25

Blade inches	Handle inches	Package		Per dozen
		Dozen	Wt. lbs.	
6	4 7/8	1 1/2	1 1/4	\$ 3.95
8	5 7/8	1 1/2	1 3/4	4.30
10	7 3/8	1 1/2	2 1/4	4.65
12	8 1/2	1 1/2	2 7/8	5.00
14	10 1/4	1 1/2	3 1/2	5.40

MITRE BOXES—MALLET

LANGDON ACME MITRE BOX

Made of iron and steel. Automatic device to hold saw above the work when desired. Extra long saw guides for stability. Quickly adjusted swinging lever that may be locked at positive angles or at intermediate points. Work supports that can be used also to get angles more acute than forty-five degrees. Supporting gib beneath the saw to prevent splintering at the end of the cut.

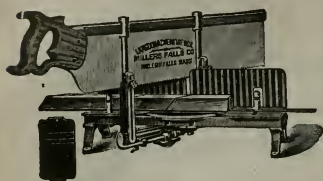


Fig. 68

No.	Size	Diam. of Saw inches	Cap. at Right Angle inches	Cap. at Mitre inches	Weight Box lbs.	Weight Net lbs.	Price
68	1	22x4	7½	5	34	23	\$12.00
69	1	24x4	7½	5	35	23½	12.50
70	1	26x4	7½	5	36	24	13.00
71	2	22x4	10½	7	34	23	13.00
72	2	24x4	10½	7	35	23½	13.50
73	2	26x4	10½	7	36	24	14.00
74	2½	28x5	10½	7	37	25	15.50
75	2½	30x5	10½	7	38	25½	16.00

MITRE BOXES

These boxes are compact, strong and durable and are quickly put together or taken apart for convenience in carrying.

The entire frame is one solid casting, insuring great strength.

The saw guide uprights are securely clamped in tapered sockets in the swivel arm and can be adjusted to hold the saw without play, and also to counteract a saw that runs out of true, due to improper setting or filing. This is a new feature that will be appreciated.

The second socket in the swivel arm permits the use of a short saw or allows a much longer stroke with a standard or regular saw.

The swivel arm is provided with a tapered index pin which engages in holes placed on the under side of the base. These holes are made at the commonly used angles as designated on top of the base allowing 3, 4, 5, 6, 8, 12 and 24 sided pieces to be cut. The edge of the base is graduated in degrees and the swivel arm can be set and automatically fastened at any degree desired. This automatic fastening device holds the swivel arm firmly to the base in all positions.

The uprights, front and back, are graduated in sixteenths of inches, and movable stops can be set, by means of thumb, screws to the depth of the cut desired.

Stock guides hold all kinds of ordinary work, as well as irregular forms, and can be used as length gauges for duplicating short pieces.

Automatic catches on the uprights hold the saw up, which allows the use of both hands in placing the work. The adjustable stop on top of the saw, coming in contact with the lever trip, releases the front catch, and the saw in falling pitches slightly forward automatically releasing the rear catch, without any necessity of taking the hand from the saw or touching the lever trip. Two cone pointed leveling screws on the rear feet prevent the box sliding when in use. These boxes are regularly packed with back saws made by Henry Disston and Sons, Inc.

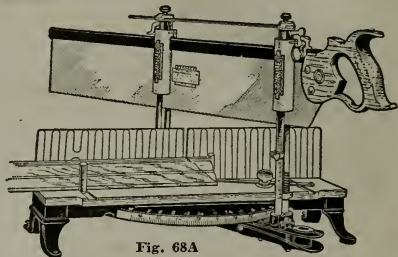


Fig. 68A

No.	Saw	Capacity Right Angle inches	Capacity Mitre (45°) inches	Capacity at 30° without Stock Guide inches	Weight with Saw lbs.	Box Only each	With Saw each
240	20x4	8½	5½	3½	28	\$ 8.50	\$10.50
242	22x4	8½	5½	3½	28½	8.50	10.75
244	24x4	8½	5½	3½	28½	8.50	11.00
246	26x4	8½	5½	3½	30	8.50	11.25
346	26x4	9½	6½	4½	34	9.50	12.25
358	28x5	9½	6½	4½	36	9.75	13.00
460	30x6	11	7½	5½	51	12.50	16.00

MALLET

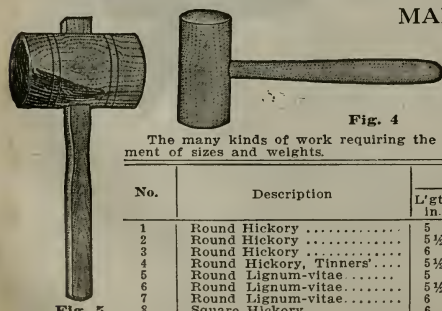


Fig. 5



Fig. 11

The many kinds of work requiring the use of a mallet necessitate a large assortment of sizes and weights.

No.	Description	Heads		Length Handle in.	Weight per dozen	Price per dozen
		L'gth in.	Diameter in.			
1	Round Hickory	5	3	10½	15½	\$1.50
2	Round Hickory	5½	3½	13	22	2.00
3	Round Hickory	6	4	13	23½	2.50
4	Round Hickory, Tinners'	5½	2½ or 2½	10½	10½	1.00
5	Round Lignum-vitæ	5	3	10½	18	3.00
6	Round Lignum-vitæ	5½	3½	13	23½	4.00
7	Round Lignum-vitæ	6	4	13	24	5.00
8	Square Hickory	6	2½x3½	10½	16	2.00
9	Square Hickory	6½	2½x3½	13	21½	2.50
10	Square Hickory	7	3 x4	13	24	3.00
11	Square Lignum-vitæ	6	2½x3½	10½	22	3.75
12	Square Lignum-vitæ	6½	2½x3½	13	31	4.75
13	Square Lignum-vitæ	7	3 x4	13	36½	5.75
14	Round Hickory, Iron Rings	6	4	13	34½	5.50
14½	Round Hickory, Iron Rings	5½	3½	10½	23	4.00
15	Round Iron, Hickory Ends	4	2½	10½	34	4.00
16	Iron Socket, Hickory Ends	5½	3	12	43½	7.50

PLUMBS AND LEVELS



Fig. 30

Fig. 30. DUPLEX ADJUSTABLE PLUMBS AND LEVELS

These Levels can be read conveniently, even if held at arm's length above the head. They have three glasses: A level glass set in the top in the usual way, a plumb glass, and a second level glass set in the side. These latter two glasses are set close to one surface of the stock so that the angle of vision of the bubble is greatly increased. The second level glass can be readily reversed to form a second plumb, if desired.

They are made from 1½x3¼ inch selected stock, in 24, 26, 28 and 30 inch lengths.
 No. 30. Hardwood, brass tips, 24 to 30 inches long; ½ dozen in 24 lb. package.....per dozen \$18.00
 No. 50. Hardwood, 3 ply, brass tips, brass tips, 24 to 30 inches long; ½ dozen in 24 lb. package....." 24.00
 No. 25. Mahogany, brass tips, brass tips, 24 to 30 inches long; ½ dozen in 22 lb. package....." 24.00



Fig. 0. Non-Adjustable

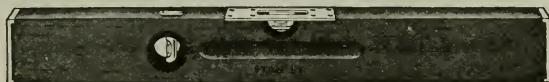


Fig. 3. Adjustable

These Levels need no introduction to the hardware trade as they are of the design and workmanship that have been known as standard for nearly half a century.

They are made from 1½x3¼ inch stock and in four lengths of two inches difference.

Non-adjustable

No. 0. Hardwood, 24 to 30 inches long; ½ dozen in 20 lb. package.....per dozen \$9.00

Adjustable

No. 3. Hardwood, brass tips, 24 to 30 inches long; ½ dozen in 22 lb. package.....per dozen \$15.00



Fig. 47

MASON'S SIX-GLASS PLUMBS AND LEVELS

These Levels have two level glasses and four plumb glasses so arranged that no matter how the tool is taken up, one or more of them are available with which to level or plumb.

Each glass is set solid in a metal case, which case is screwed into the level stock.

Each level and plumb glass is protected on both sides of the stock by a glass disc which serves not only to protect the glass from breakage but keeps dirt and moisture from the openings.

The level stock is made of light weight wood, thoroughly seasoned and specially prepared. It is 3¼ inches wide by 1¼ inches thick.

Two hand holes are provided for convenience and safety in handling.

Made in two sizes, 42 and 48 inches long.

No. 47. 42 inches long, 6 proved glasses.....per dozen \$36.00
 No. 48. 48 inches long, 6 proved glasses....." 39.00



Fig. 36



Fig. 37

METALLIC PLUMBS AND LEVELS

No. 36 has top and bottom milled and wet ground to insure two perfectly parallel surfaces. The glasses are so set that either surface may be used to level or plumb. They are set in metal cases which fit accurately on supports cast in the frame of the level. The cases are held on the supports by means of eccentric cone centers at each end, with screw adjustment.

These Levels are also made with a grooved bottom for working on shafting, piping, etc., without extra charge. In ordering use the numbers 36G-6 inch, 36G-9 inch, etc.

No. 37 is of the same general design as the No. 36. The levels, however, have ground glasses, are full nickel plated, and the glasses are protected. This latter feature consists of a shell or cover, termed "Eclipse Case." When the level is not in use this case can be turned so as to completely protect the glass from damage.

These Levels are also made with a grooved bottom for working on shafting, piping, etc., without extra charge. In ordering, use the numbers 37G-6 inch, 37G-9 inch, etc.

No. 36. Japanned Nickel Trim, Proved Glasses

6 inches long; 1 only in ¾ lb. package..	per dozen \$15.00
9 inches long; 1 only in 1¼ lb. package..	" 18.00
12 inches long; 1 only in 1¾ lb. package..	" 21.00
18 inches long; 1 only in 3 lb. package..	" 24.00
24 inches long; 1 only in 4¼ lb. package..	" 27.00

No. 37. Nickel Plated, Ground Glasses

6 inches long; 1 only in ¾ lb. package..	per dozen \$24.00
9 inches long; 1 only in 1¼ lb. package..	" 30.00
12 inches long; 1 only in 1¾ lb. package..	" 36.00
18 inches long; 1 only in 3 lb. package..	" 42.00
24 inches long; 1 only in 4¼ lb. package..	" 48.00

PLUMBS AND LEVELS AND ACCESSORIES



Fig. 104

SMALL PLUMBS AND LEVELS

They are especially adapted for use by millwrights, plumbers, or for any work where a level of greater length and cross-section cannot be readily used. These levels are not adjustable.

Nos. 102, 103, 104 made from $1\frac{1}{4} \times 2\frac{1}{2}$ inch, No. 104 $\frac{1}{2}$ and $1\frac{1}{4}$ from $1\frac{1}{4} \times 2\frac{1}{8}$ inch, and No. 1 $\frac{1}{2}$ from $1\frac{1}{4} \times 2\frac{1}{2}$ inch stock.

They are made in four lengths of two inches difference (see below).

No. 102.	Hardwood, levels only, 10 to 16 inches long, 1 dozen in 11 lb. package.....	per doz. \$ 4.50
No. 103.	Hardwood, levels only, 18 to 24 inches long, 1 dozen in 23 lb. package.....	per doz. 6.00
No. 104.	Hardwood, 12 to 18 inches long, 1 dozen in 15 lb. package.....	per doz. 6.00
No. 104 $\frac{1}{2}$.	Hardwood, brass tips, 12 to 18 inches long, 1 dozen in 18 lb. package.....	per doz. 9.60
No. 1 $\frac{1}{2}$.	Mahogany, 18 to 24 inches long, 1 dozen in 21 lb. package.....	per doz. 11.40
No. 1 $\frac{3}{4}$.	Mahogany, brass tips, brass lips, 12 to 18 in. long, 1 dozen in 18 lb. package.....	per doz. 12.00

MACHINISTS' IRON LEVELS

Fig. 39 $\frac{1}{2}$

Are fitted with proved glasses set solid in plaster. The top plate is entirely separate from the glass.

No. 38 $\frac{3}{4}$. 4 inches long, nickel plated, proved glass, $\frac{1}{2}$ dozen in 1 $\frac{1}{2}$ lb. package.....per doz. \$5.00
No. 39 $\frac{1}{2}$. 6 inches long, nickel plated, proved glass, $\frac{1}{2}$ dozen in 3 $\frac{1}{2}$ lb. package.....per doz. 6.00

ECLIPSE LEVELS

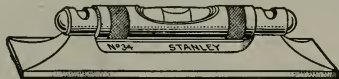


Fig. 34

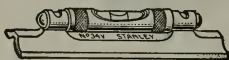


Fig. 34V

Have a glass fitted in a metal case. An outer shell, termed by us "Eclipse Cover," is fitted over this case, which can be turned so as to completely protect the glass. The case is screwed to a substantial metal base. The levels may be adjusted by these screws. For leveling up shafting, piping, etc., they are made with "V" bottoms, without extra charge. In ordering, use the Nos. 34V-4 in., 34V-6 in., etc.

No. 34.	4 inches long, nickel plated, ground glass, 1 only in $\frac{3}{4}$ lb. package....	per doz. \$15.00
No. 34.	6 inches long, nickel plated, ground glass, 1 only in $\frac{3}{4}$ lb. package....	per doz. 18.00
No. 34.	8 inches long, nickel plated, ground glass, 1 only in 1 $\frac{1}{4}$ lb. package....	per doz. 24.00
No. 34.	10 inches long, nickel plated, ground glass, 1 only in 1 $\frac{3}{4}$ lb. package....	per doz. 30.00

STRAIGHT EDGE POCKET LEVELS



Fig. 40

Can be attached to any straight edge or Carpenter's square.

No. 40.	Iron body, japanned, japanned top plate, 1 dozen in 1 $\frac{1}{2}$ lb. package.....	per gro. \$18.72
No. 41.	Iron body, japanned, brass top plate, 1 dozen in 1 $\frac{1}{2}$ lb. package.....	per gro. 20.16
No. 42.	Brass body, polished, brass top plate, 1 dozen in 2 lb. package.....	per gro. 68.40
No. 46.	Iron body, japanned, brass top plate, 1 dozen in 2 $\frac{1}{2}$ lb. package.....	per gro. 27.36

LEVEL SIGHTS



Fig. 1

They can be attached to any level, for leveling from one given point to another a long distance away. When not in use the level sights are easily detached, and can be packed away in a small space, for future use.

No. 1.	Level Sights for wood levels, 1 pair in $\frac{1}{4}$ lb. package.....	per doz. pair \$9.00
No. 2.	Level Sights for iron levels, 1 pair in $\frac{1}{4}$ lb. package.....	per doz. pair 9.00

PROVED GLASSES

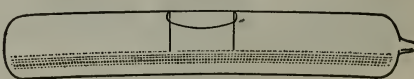


Fig. 127

These Plumb and Level Glasses are made of extra thick tubing. By a patented process each glass is marked at its central or crowning point by two indelible lines, enabling the user to very quickly center the bubble.

Length, 1 in.....	per gro. \$ 9.48
Length, 1 $\frac{1}{4}$ in.....	" 9.60
Length, 1 $\frac{1}{2}$ in.....	" 9.72
Length, 1 $\frac{3}{4}$ in.....	" 9.84
Length, 2 in.....	" 10.00
Length, 2 $\frac{1}{4}$ in.....	" 10.25
Length, 2 $\frac{1}{2}$ in.....	" 10.50
Length, 3 in.....	" 11.50
Length, 3 $\frac{1}{2}$ in.....	" 13.00
Length, 4 in.....	" 14.50
Length, 4 $\frac{1}{2}$ in.....	" 16.00
Assorted.....	" 12.00

FOR TRANSITS, LEVELS AND RODS, SEE INDEX

GAUGES AND TRAMMEL POINTS



Fig. 61



Fig. 65

WOOD MARKING GAUGES

These Marking Gauges are made of selected wood. The bars are oval in form and are graduated in 16ths of an inch for 6 inches from the point. Gauges having a brass thumb screw have the bar protected by a brass shoe. Face plates are brass plates inserted in the head to prevent wear. The marking points (one each) are of tempered steel. The marking point in No. 65 is securely locked by a screw and can be readily removed for sharpening.

No. 61. Beech, boxwood screw, square head.
1 dozen in 2 1/2 lb. package.....per dozen \$0.96

No. 65. Boxwood, brass screw, square head, face plate. 1/2 dozen in 1 1/2 lb. package. Per dozen 4.20

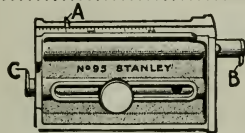


Fig. 95

BUTT GAUGES

In hanging doors, there are three measurements to be marked—the location of butt on the casing, the location of butt on the door, and the thickness of butt on both casing and door. The term "Butt Gauge" covers a gauge having three cutters, purposely arranged so that no change of setting is necessary when hanging several doors. In reality these tools comprise Rabbet Gauges, Marking Gauges and Mortise Gauges of a scope sufficient for all door trim, including lock plates, strike plates, etc.

All bars are locked by set screws and are graduated in sixteenths of an inch.

No. 95. Iron body, steel bars, nickel plated;
1 only in 1/2 lb. package.....per dozen \$0.00

TRAMMEL POINTS

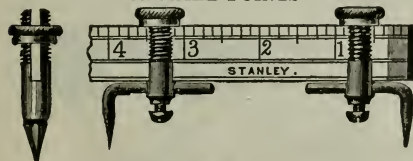


Fig. 90

A practical form of trammel points, adapted for convenient use on a carpenter's rule. They can be attached to folding rules of any ordinary width; and on many kinds of work will take the place of regular trammel points, calipers or dividers. A complete set consists of two brass trammel heads, with movable steel points, and one head with a pencil socket.

No. 99. Stanley's rule, in sets of three, per set \$0.50



Fig. 97



Fig. 98

METAL BAR GAUGES

These gauges have steel bars, and the heads are machined castings. Pin point cutters are used. The bars in these gauges having a metal head can be set so that either a narrow or wide gauging surface is obtained. Where two cutters are fitted on one bar, there are graduations for each cutter.

All parts are finely finished, and the metal bars and heads are nickel plated.

Mortise Gauges have double bars, 6 1/2 inches long, graduated in sixteenths of an inch for five inches.

No. 98. Metal head, pin points; 1 only in 1/2 lb. packageper dozen \$0.72

Marking Gauges have a single bar, 6 1/2 inches long, graduated in sixteenths of an inch for five inches.

No. 97. Metal head, pin point; 1 only in 1/2 lb. packageper dozen \$3.48

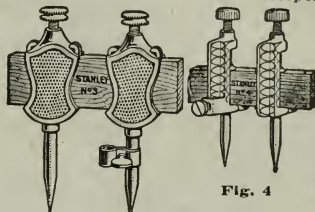


Fig. 1, 2, 3



Fig. 8

TRAMMEL POINTS AND PENCIL CLASP

Used by millwrights, carpenters, machinists and all mechanics having occasion to strike arcs or circles larger than can be conveniently done with ordinary compass dividers.

Nickel Trammel Points

Can be attached to one side of any straight stick. The pencil socket will take an ordinary sized pencil, or a full sized oval shaped carpenter's pencil.

No. 4. Trammel Point, for straight edge up to 1 1/4 inches; 1 set in 1/4 lb. package. Per dozen sets.....\$0.00

Bronze Trammel Points

Strongly constructed and have steel points, on either of which an accompanying pencil socket can be clamped.

No. 1. Trammel Point, for 5/8 inch straight edge; 1 set in 1/4 lb. package.....per dozen sets \$14.40

No. 2. Trammel Point, for 1 inch straight edge; 1 set in 1/4 lb. package.....per dozen sets 18.00

No. 3. Trammel Point, for 1 1/4 inch straight edge; 1 set in 1/4 lb. package.....per dozen sets 25.00

Patent Pencil Clasp

For attaching to a pair of ordinary dividers. Twelve mounted on attractive display card.

No. 8. Pencil Clasp, 1 1/4 inches long, nickel plated, 2 dozen in 1 lb. package.....per dozen \$1.25

FOR ALL STYLES OF CARPENTERS' TOOLS, SEE INDEX

BENCH SCREWS AND STOPS—EXTENSION BIT HOLDERS, ETC.

IRON BENCH SCREWS

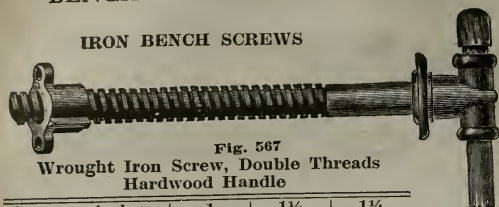


Fig. 567

Wrought Iron Screw, Double Threads
Hardwood Handle

Diameter, inches...	1	1 1/4	1 1/2
Length, inches....	15	16	17
Per doz.....	\$6.50	\$7.50	\$9.00

MORRILL'S
"PERFECT"
BENCH STOP

No. 1. Square steel
spindle.

Per doz. \$9.00

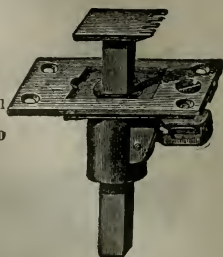


Fig. 568

EXTENSION BIT HOLDERS

No. 1

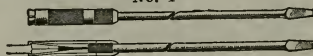


Fig. 569

Will extend the bit, enabling the user to bore through walls, floors, etc., where the ordinary bit will not reach. Bit socket and shank are of one piece of steel and so constructed that the bit will not work loose while boring. Any length holder will follow up a 3/8 inch bit. Have a 1/8 inch tip and are nickel plated. Packed 1/2 doz. in box.

12 inches long....per doz. \$13.75 18 inches long....per doz. \$15.25 24 inches long....per doz. \$17.50
16 inches long.... " 13.75 20 inches long.... " 15.25 30 inches long.... " 20.50

EXTENSION BIT HOLDER No. 5



Fig. 569A

Polished and nickel plated steel.

Follows bits 5/8 inch in diameter and larger into their bores.

Four reliably strong, steel jaws, made in one piece, grip firmly over shoulders of bit stock shanks.

Length, inches.....	12	15	18	21	24	30
Weight, lbs., per doz.....	7	8	9	10	11	13
Price per doz.....	\$14.60	\$14.80	\$15.00	\$15.20	\$15.40	\$15.80

CHAMPION SCREWDRIVERS

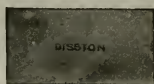
Forged from toughest steel, well finished throughout.



Fig. 570

Blade, inches...	2 1/2	3	4	5	6	7	8	9	10	12
Price per doz..	\$3.00	\$3.50	\$4.25	\$5.00	\$6.00	\$7.00	\$8.00	\$9.00	\$10.00	\$12.00

CABINET SCRAPERS



DISIGN

Size	Plain Cut Edges	Ground Even Gauge and Dressed on Edges	Size	Plain Cut Edges	Ground Even Gauge and Dressed on Edges
2 x4	\$0.30	\$0.55 per doz.	3 1/2 x6	\$0.90	\$1.65 per doz.
2 x6	.45	.80 "	4 x4	.60	1.10 "
2 1/2 x5	.50	.90 "	4 x5	.80	1.45 "
3 x4	.45	.80 "	4 x6	.90	1.65 "
3 x5	.55	1.00 "			
3 x6	.65	1.20 "			

Assortments

	Plain Cut Edges	Ground and Dressed
Packed one doz. assorted, small, 2x4 to 3x6 in box.....	\$0.60	\$0.90
Packed one doz. assorted, large, 3 1/2 x4 to 5x6 in box.....	.80	1.45

Unless otherwise specified, plain cut edges will be sent.

FOR OTHER STYLES OF SCREW DRIVERS, SCRAPERS AND BITS, SEE INDEX

THREE-IN-ONE SCREW DRIVER



Fig. 571

A handy pocket screwdriver. Has three blades which nest into each other, yet each is a complete screwdriver in itself. These screwdrivers are very handy, and should be in every home tool kit or tool drawer. Highly polished and nickel plated. Length over all, 3 3/4 inches.

Price each\$0.25

CLAMPS AND HAND SCREWS

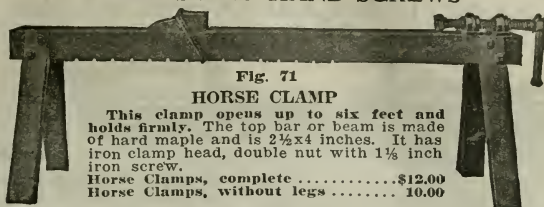


Fig. 71
HORSE CLAMP

This clamp opens up to six feet and holds firmly. The top bar or beam is made of hard maple and is 2½x4 inches. It has iron clamp head, double nut with 1½ inch iron screw.

Horse Clamps, complete\$12.00
Horse Clamps, without legs 10.00

COLT'S CABINET CLAMP

Eccentric or Screw

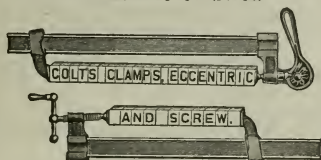


Fig. 96

Formerly listed as Colt's cabinetmakers' and builders' steel bar clamp.

The Cabinet clamp is made of 1½ inch I bar steel with 2 inch reach, with the sliding foot and eccentric lever. This clamp can be applied to work quicker than any other clamp made and is our most popular style. The sliding foot with its improved locking device will grip the bar at any point without the necessity of notches which weaken the bar or springs to get out of order.

The extra heavy Clamp is made of 1½ inch steel bar with 2 inch reach.

One-half heavier than the Cabinet style and suitable for heavy work.

Eccentric or screw as desired. If not specified we always send the eccentric.

Price per doz. Either Style

	Cabinet	Extra Heavy		Cabinet	Extra Heavy
10 inch....	\$10.00	.....	48 inch....	\$21.00	\$32.16
12 inch....	10.80	\$15.00	60 inch....	25.20	37.68
18 inch....	12.60	18.36	72 inch....	28.80	43.20
24 inch....	14.40	21.12	84 inch....	32.40	48.72
30 inch....	16.20	23.88	96 inch....	36.00	54.24
36 inch....	18.00	26.64			

We can furnish the Cabinet Clamp with 4 inch reach from bar to center of button, eccentric and also screw, up to 24 inch length for light work. If longer than 24 inches it should be made with screw for very light work and we do not recommend this clamp over 24 inch length.

1½ Inch I Bar—Price per doz.

10 inch....	\$10.00	18 inch....	\$13.20
12 inch....	11.40	24 inch....	15.00

SHIP CARPENTERS' CLAMP SCREW

Sliding Jaw

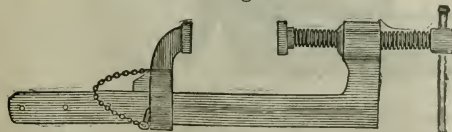


Fig. 3

No.	Size of Frame Inches	Space in Clear Inches	Each
1	3 x ¾	30	\$14.25
2	3½ x ¾	36	17.75
3	4 x 1	36	20.00

HAND SCREWS

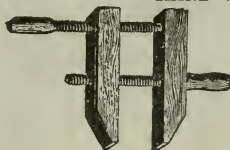


Fig. 800

Jaws made of well-seasoned hard maple, sanded and oiled. Spindles made of selected hickory stock, air seasoned, and under test show extraordinary twisting resistance. They are tumbled and waxed. Instead of lessening the natural strength of the wood it is retained uninjured in the threads by making them saw-cut with a special machine and the wood is not weakened by having a V shaped tool forced through it, tearing and bruising the grain. The threads on the spindles are 25% stronger and more lasting than those of any other wood hand screw.

HAND SCREW LIST

July 1, 1907

No.	Diameter of Jaw Inches	Length of Screw Inches	Length of Jaws Inches	Size of Spindle Inches	Opens Inches	List Price per doz.
800	1½	28	24	3 x 3	17	\$40.00
801	1½	26	22	2½ x 2½	15½	35.00
802	1½	24	20	2½ x 2½	13¾	32.00
803	1½	22	20	2½ x 2½	12	30.00
804	1½	22	18	2½ x 2½	12¼	28.50
805	1½	20	18	2½ x 2½	10½	27.00
806	1	20	16	2½ x 2½	11	25.00
807	1	18	16	2½ x 2½	9¾	23.50
808	¾	18	14	2½ x 2½	10	22.00
809	¾	16	14	2 x 2	8½	20.00
810	¾	16	12	1½ x 1½	8¼	18.50
811	¾	14	12	1½ x 1½	7¼	17.00
812	¾	12	10	1½ x 1½	5½	14.50
813	¾	10	8	1½ x 1½	4½	12.00
814	¾	8	7	1½ x 1½	3	9.50
815	½	6	5	1 x 1	2	8.00
816	½	5	4	¾ x ¾	1½	7.00

Parts, either screws or jaws, list one-third price of complete Hand Screw.

BOAT CLAMP SCREWS

Wrought Iron

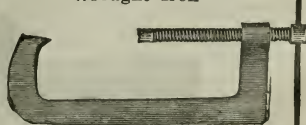


Fig. 70

No.	Size of Frame Inches	Dia. of Screw Inches	Space in Clear Inches	Each
10	2½ x 5	1½	18x5	\$7.00
20	2½ x 5	1½	18x4	5.75
30	2 x 5	1½	14x4	5.00
40	1½ x 5	1½	12x3½	4.50
50	1½ x 5	1½	10x3½	3.75
60	1½ x 5	1½	8x3	3.00
70	1½ x 5	1	6x3	2.50

STEEL BAR CARPENTERS' CLAMP

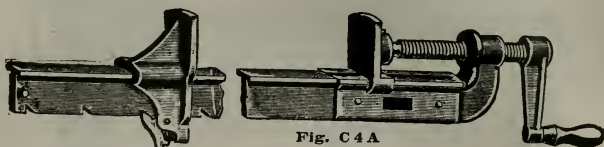


Fig. C 4 A

The bar is rolled from a special quality of stiff steel; the "T" shape has much more strength for a given weight than is possessed by flat stock. The notches are cut on the lower edge of the bar, affording greater holding power to the sliding jaw than if they were on the upper edge.

The steel screw is provided with a deep and powerful thread; the crank, sliding jaws and pawl are malleable, and the handle of wood, ebonized. The sizes given below represent a maximum width of work which each size will take.

No.	Size of Beam inches	Diameter of Screw inches	Width of Work up to feet	Price per pair	No.	Size of Beam inches	Diameter of Screw inches	Width of Work up to feet	Price per pair
C 1 A	$\frac{1}{8}$ " x $1\frac{1}{2}$ "	$\frac{5}{8}$ "	1	\$3.80	C 5 A	$\frac{1}{8}$ " x $1\frac{1}{2}$ "	$\frac{5}{8}$ "	5	\$ 7.00
C 2 A	$\frac{1}{8}$ " x $1\frac{1}{2}$ "	$\frac{5}{8}$ "	2	4.20	C 6 A	$\frac{1}{4}$ " x $1\frac{3}{4}$ "	$\frac{3}{4}$ "	6	11.90
C 3 A	$\frac{1}{8}$ " x $1\frac{1}{2}$ "	$\frac{5}{8}$ "	3	5.60	C 7 A	$\frac{1}{4}$ " x $1\frac{3}{4}$ "	$\frac{3}{4}$ "	7	13.30
C 4 A	$\frac{1}{8}$ " x $1\frac{1}{2}$ "	$\frac{5}{8}$ "	4	6.30	C 8 A	$\frac{1}{4}$ " x $1\frac{3}{4}$ "	$\frac{3}{4}$ "	8	15.40

WOOD BAR CARPENTERS' CLAMP

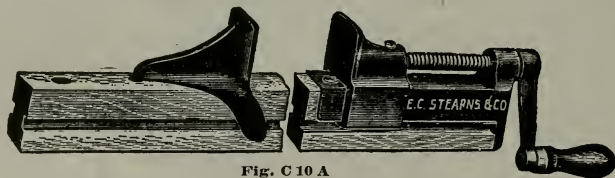


Fig. C 10 A

This Clamp is suitable for all purposes in which woodwork is required to be firmly held in a powerful Clamp. The bottom of the wood bar is perfectly smooth, the Clamps may be set flat on the bench and the work put in them from the upper side. The movable jaw may be engaged in the different holes to accommodate different sizes of work.

The bar is made of thoroughly seasoned and carefully selected hard wood, oil finished, $1\frac{3}{4}$ " x $2\frac{3}{4}$ " inch iron, carefully japanned. Steel screw and malleable fittings.

No.	Length feet	Price each	No.	Length feet	Price each
C 9 A	4	\$3.00	C 11 A	6	\$3.70
C 10 A	5	3.50	C 12 A	8	4.00

CLAMP IRONS

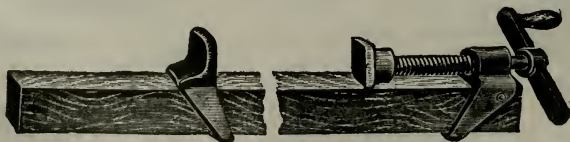


Fig. C 13 A

A Very Strong and Durable Set of Clamp Irons

Wood bar is illustrated for purpose of showing how irons are attached. The irons only are furnished. The screw is made of cold rolled steel with a deep, square-cut thread, and heavy swivel washer on the end next to the work. Finished with a heavy crank and handle. May be quickly and easily attached to any $1\frac{3}{8}$ " x $2\frac{1}{2}$ " inch wood bar of any length.

C 13 A. 1 dozen sets in case.....per set \$1.00

FOR OTHER STYLES OF CLAMPS AND VISES, SEE INDEX

RULES

The rules listed below are of superior grade, due to the quality and seasoning of the wood, the weight of the metal used in the joints and trimmings, the nicety of graduation, and the care given to the finish. As will be noted in the various tables following, they are made in a wide range of numbers varying in length, width, forms of joints and plates, style of trim, and graduations. All joints, plates, bindings, etc., in these rules are made of brass, which prevents rusting.

TWO FOOT BOXWOOD RULES,
UNBOUND

Fig. 62

FOUR FOLD, 1 INCH WIDE

- No. 68. Round joint, middle plates, 8ths and 16ths drafting scale.....per doz. \$2.50
 No. 61. Square joint, middle plates, 8th and 16ths drafting scales.....per doz. 3.00
 No. 63. Square joint, edge plates, 8ths, 10ths, 12ths and 16ths drafting scales...per doz. 4.00

FOUR FOLD, 1 1/2 INCHES WIDE

- No. 72. Square joint, edge plates, 8ths, 10ths and 16ths drafting scales.....per doz. \$5.00
 Packed 1/2 dozen in box. Weight per dozen, approximately 2 lbs.

TWO FOOT BOXWOOD RULES,
BOUND

FOUR FOLD, 1 INCH WIDE

- No. 84. Square joint, half bound, 8ths, 10ths, 12ths and 16ths drafting scales...per doz. \$6.50
 No. 62. Square joint, full bound, 8ths, 10ths, 12ths and 16ths drafting scales...per doz. 8.00

THREE FEET, FOUR FOLD, 1 INCH WIDE,
UNBOUND.

- No. 66 1/2. Arch joint, middle plates, 8ths and 16ths drafting scale.....per doz. \$6.00
 Packed 1/2 dozen in box. Weight per dozen, approximately 2 1/4 lbs.

SPECIAL BOXWOOD RULES



Fig. 53 1/2

ARCHITECTS' FOUR FOLD, 1 INCH WIDE

The inside edges of these rules are beveled and divided into Drafting Scales, 1/8, 1/4, 3/8 and 1/2 inch to the foot. The beveling brings the edges close to the surface being scaled, which is a great convenience in laying out work or when used with a pencil. Drafting scales are used for laying out work or reading drawings where a scale of 1/4 and 1/2 inch, etc., to the foot is found convenient.
 No. 53 1/2. Arch joint, edge plates, 8ths, 10ths, 12ths and 16ths drafting scales...per doz. \$8.00
 Packed 1/2 dozen in box. Weight per dozen, 1 1/2 lbs.



Fig. 806

RIVET JOINT ZIGZAG RULES

Foot	Weight per dozen lbs.	No.	Yellow Enamel Finish, Per doz.	No.	White Enamel Finish, Per doz.
2	7/8	802	\$1.80	852	\$2.04
3	1 1/8	803	2.70	853	3.00
4	1 1/4	804	3.60	854	3.96
5	2 1/4	805	4.50	855	4.92
6	2 7/8	806	5.40	856	6.00
8	4	808	7.20	858	7.92

Packed 1 dozen in box.

FOR LEVELS, PLUMBS, AND TAPE LINES, SEE INDEX

MASTER SLIDE RULE

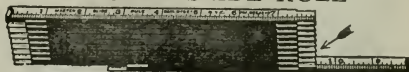


Fig. 5695

Especially adapted for measuring inside points not accessible for regular rules.
 Length, 6 feet.....per doz. \$15.00

BOXWOOD CALIPER RULES

All Caliper Rules are regularly made with caliper left hand, as shown in illustration. They can be furnished with caliper right hand—that is, with the caliper slide in the other leg of the rule, the caliper head or end piece being turned the other way—for 25c extra per dozen. Caliper slides are regularly graduated in 16ths, but can be furnished in 32nds without additional charge, if so ordered (except No. 83C which is regularly graduated in 32nds).

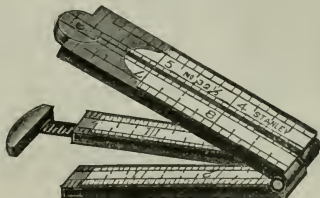


Fig. 32 1/2

SIX INCH, TWO FOLD

- No. 36. Square joint, 7/8 inch wide, 8ths, 10ths, 12ths and 16ths.....per doz. \$4.50
 Packed 1/2 dozen in box. Weight per dozen, approximately 1 lb.

ONE FOOT, TWO FOLD

- No. 36 1/2. Square joint, 1 1/8 inches wide, 8ths, 10ths, 12ths and 16ths.....per doz. \$6.50
 Packed 1/2 dozen in box. Weight per dozen 1 1/4 lbs.

ONE FOOT, FOUR FOLD

- No. 32. Arch joint, edge plates, 1 inch wide, 8ths, 10ths, 12ths and 16ths.....per doz. \$ 7.00
 No. 32 1/2. Arch joint, full bound, 1 inch wide, 8ths, 10ths, 12ths and 16ths.....per doz. 10.00
 Packed 1/2 dozen in box. Weight per dozen approximately 1 1/4 lbs.

TWO FOOT, FOUR FOLD

- No. 83C. Arch joint, edge plates, 1 1/8 inches wide, 8ths, 10ths and 16ths.....per doz. \$12.00
 Packed 1/2 dozen in box. Weight per dozen, approximately 3 lbs.

RAYBONE COMBINATION
BOXWOOD

Fig. 5694

- No. 1190. Two foot, four fold, with split level and degrees on joint.....per doz. \$15.00

RULES AND BEVELS

GLASS CUTTERS' RULES

With Brass Flange or Lip

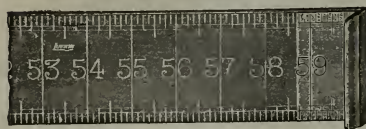


Fig. 7143

Graduated Both Sides and Both Edges in Consecutive
Inches and 8ths
POLISHED MAPLE

No.	Length Inches	Size Inches	Weight per dozen lbs.	Per dozen
7141	36	1 3/4 x 1/4	7	\$29.40
7142	48	1 3/4 x 1/4	9	41.40
7143	60	2 1/2 x 1/4	15	53.40
7144	72	2 1/2 x 1/4	17	64.80
7145	84	3 x 1/4	22	82.80
7146	96	3 x 1/4	27	100.80
7147	108	3 1/2 x 1/4	34	118.20
7148	120	3 1/2 x 1/4	37	136.20
7149	144	3 1/2 x 3/8	65	204.00

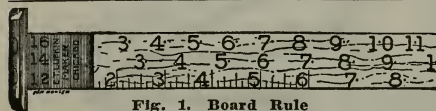


Fig. 1. Board Rule

No. 1. Three tier, 3 1/2 foot inspector's Board Rule per dozen \$27.00
This Rule is made of the very best second growth white hickory. The head is brazed (steel caps and brass shoulders).

No. 2. Three tier, 3 foot Board Rule. per dozen \$25.00
This Rule is the same as No. 1, except in length. It is the rule for regular yard work.

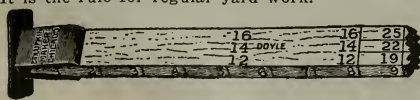


Fig. 14. Log Rule

No. 14. Square Head Log Rule figured to 48 inches, with 8 inch handle, any scale desired..... per dozen \$27.00
No. 15. Square Head Log Rule, figured to 36 inches, with 6 inch handle, any scale desired..... per dozen 23.00

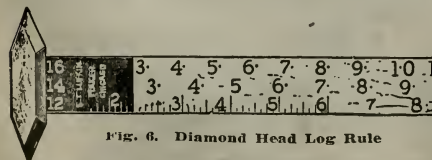


Fig. 6. Diamond Head Log Rule

This patent Diamond Head is especially recommended on account of the head being able to withstand more strain than regular head. We carry in stock the Diamond Head in Nos. 2 and 6, 3 foot, in lengths of 8, 10, 18 one side, 12, 14, 16, reverse side.

Made to order in any size.
Extra price, add to list..... per dozen \$2.00

EXTENSION RULES



Fig. 240

These Rules are very useful for accurately measuring the distance between two fixed points. When extended to required length, the sections may be secured by the set screw. To read this rule, add to the number of feet indicated by large figure, nearest left end of rule, the inches and fractions of inches exposed from under left hand end of the upper section.

No. 240. 2-4 feet long, 1 inch wide. Maple Brass trim. 8ths of inches..... per dozen \$ 8.00
No. 360. 2-6 feet long, 1 inch wide. Maple Brass trim. 8ths of inches..... per dozen 9.00
No. 480. 4-8 feet long, 1 inch wide. Maple Brass trim. 8ths of inches..... per dozen 10.00
No. 510. 5-10 feet long, 1 inch wide. Maple Brass trim. 8ths of inches..... per dozen 12.00
No. 612. 6-12 feet long, 1 inch wide. Maple Brass trim. 8ths of inches..... per dozen 15.00
Weight per dozen, approximately 12 lbs.

SHIP CARPENTERS' BEVELS



Fig. 42

No. 42. Boxwood, double tongue. Divided 8ths and 16ths. Packed 1 dozen in box. Weight per dozen, 1 1/2 lbs..... per dozen \$4.00

BLACKSMITHS' RULES



Fig. 17

This Rule consists of two legs made from spring brass, joined together by a brass joint containing a stiff spring which holds the rule rigid when open. Particularly adapted for measuring hot metal, as it can be cooled by plunging in water without rusting.

No. 17. 2 foot, 2 fold, 3/4 inch wide. Graduated in 8ths and 16ths of inches. per dozen \$6.00
Packed 1/2 Dozen in Box. Weight Per Dozen, 2 1/2 lbs.

BLACKSMITHS' HOOK AND HANDLE RULE

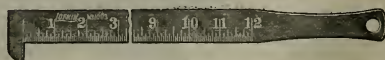
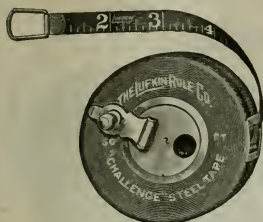


Fig. 1063

No. 1063. Made from hard brass, 1 1/2 inch thick, 1 1/2 inches wide. Graduations and figures heavy and distinct. Marked on both sides, lower edge, inches and 16ths; one side measures from inside of hook, other side from end of rule. Graduated 12 inches, have flat handles and measure 16 1/2 inches over all. Weight 8 oz. each.
Price, each..... \$1.25

FOR GLASS, GLAZIERS' POINTS AND PUTTY, SEE INDEX



"CHALLENGE" STEEL MEASURING TAPES

Instantaneous Readings

Metal lined hard leather cases, nickel plated trimmings, folding flush handle, opened by pressing pin on opposite side. Measurements guaranteed accurate.



Fig. 263. "Challenge" WITH THREE-EIGHTH INCH TAPES
Marked Feet, Inches and 8ths, One Side Only

Fig. 1263. "Challenge Junior"

No.	260	261	263	264	265	266
Length, feet.....	25	33	50	66	75	100
Wt. each, oz.....	7	8	12	14	17	21
Each.....	3.25	3.50	4.00	5.00	5.25	6.75

No.	260D	261D	263D	264D	265D	266D
Length, feet.....	25	33	50	66	75	100
Wt. each, oz.....	7	8	12	14	17	21
Each.....	3.25	3.50	4.00	5.00	5.25	6.75

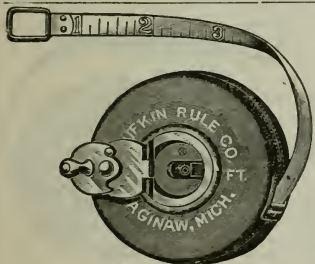
FIG. 1263. "CHALLENGE JUNIOR" STEEL MEASURING TAPES

Metal lined hard leather cases, nickel plated trimmings, folding flush handle, opened by pressing pin on opposite side. Measurements guaranteed accurate.

WITH ONE-QUARTER-INCH TAPES
Marked Feet, Inches and 16ths, One Side Only

No.	1260	1261	1263	1264	1265	1266
Length, feet.....	25	33	50	66	75	100
Wt. each, oz.....	4	5	6	7	8	11
Each.....	3.00	3.25	3.50	4.00	4.50	5.75

No.	1260D	1261D	1263D	1264D	1265D	1266D
Length, feet.....	25	33	50	66	75	100
Wt. each, oz.....	4	5	6	7	8	11
Each.....	3.00	3.25	3.50	4.00	4.50	5.75



"RELIABLE" STEEL MEASURING TAPES

Metal lined hard leather cases, double folding flush handle, opened by pressing on opposite side. Handle has extension finger hold which affords a firm grip when winding in tape. Nickel plated trimmings. Measurements guaranteed accurate.



Fig. 203. "Reliable"

Fig. 103. "Reliable Junior"

WITH THREE-EIGHTHS-INCH TAPES
Marked Feet, Inches and 8ths, Links on Back

No.	200	201	203	204	205	206	207	208
Length, feet.....	25	33	50	66	75	100	150	200
Wt. each, oz.....	9	10	13	16	19	22	30	39
Each.....	4.50	5.20	7.20	9.20	10.40	12.80	18.50	24.00

No.	200D	201D	203D	204D	205D	206D	207D	208D
Length, feet.....	25	33	50	66	75	100	150	200
Wt. each, oz.....	9	10	13	16	19	22	30	39
Each.....	4.50	5.20	7.20	9.20	10.40	12.80	18.50	24.00

FIG. 103. "RELIABLE JUNIOR" STEEL MEASURING TAPES

Metal lined hard leather cases. Double folding flush handle, opened by pressing on opposite side. Nickel plated trimmings. Handle has extension finger hold which affords a firm grip when winding in tape. Measurements guaranteed accurate.

WITH ONE-QUARTER-INCH TAPES
Marked Feet, Inches and 16ths, One Side Only

No.	100	101	103	104	105	106
Length, feet.....	25	33	50	66	75	100
Wt. each, oz.....	4	5	6	7	8	11
Each.....	3.75	4.00	4.60	5.25	5.75	7.00

Can furnish marked feet, 10ths and 100ths, one side only if desired.

METALLIC MEASURING TAPES

Flush Handle

Hard leather cases, double folding flush handle, opened by pressing pin on opposite side. Tape $\frac{5}{8}$ inch wide, made of best woven linen, with metallic warp. We guarantee these Metallic Tapes to be less liable to shrink or stretch than any other style.

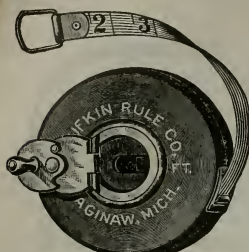


Fig. 600

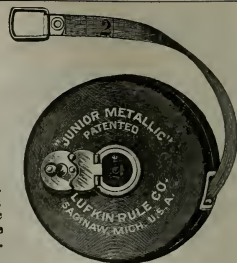


Fig. 660. Junior

Marked One Side Only in 12ths or 10ths

12ths of feet.....No.	600	601	603	604	605	606
10th of feet.....No.	600D	601D	603D	604D	605D	606D
Length.....feet	25	33	50	66	75	100
Weight each.....oz.	9	11	13	18	20	22
Each.....	\$2.00	2.30	2.80	3.10	3.40	4.20

Can furnish marked both sides, 12ths and links or 10ths and links if desired.

JUNIOR METALLIC MEASURING TAPES

Fig. 660 Flush Handle

Hard leather cases, nickel plated trimmings, double folding flush handle, opened by pressing pin on opposite side. Tape is made of best woven linen with metallic warp. Marked one side only in 10ths and 12ths. The Junior Metallic is less than one-half the size and weight of a regular Metallic Tape.

WITH THREE-EIGHTH INCH TAPES

Marked Feet, Inches and 8ths, One Side Only

No.	660	661	663	664
Length.....feet	25	33	50	66
Weight each.....oz.	4	5	6	7
Each.....	\$1.80	2.00	2.25	2.75
Tapes only, no cases.....	.75	.90	1.25	1.50

Can furnish marked feet, 10ths and 100ths, one side only, if desired.

LINEN AND ASS SKIN MEASURING TAPES.

Hard leather cases, flush handle, nickel plated trimmings. Tape $\frac{5}{8}$ inch wide, made of pure linen, and reinforced with leather the first four inches.



Fig. 400 "Sterling"

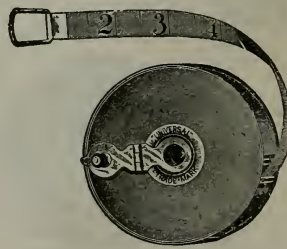


Fig. 710 "Universal"

"STERLING" LINEN MEASURING TAPES

Marked One Side Only in 12ths or 10ths

12ths of feet.....No.	400	401	403	404	405	406
10ths of feet.....No.	400D	401D	403D	404D	405D	406D
Length.....feet	25	33	50	66	75	100
Weight each.....oz	8	9	12	14	16	19
Each.....	\$1.25	1.40	1.65	1.95	2.10	2.50
Extra tapes only, marked one side.....each	.65	.75	1.00	1.15	1.25	1.50

Can furnish marked both sides, 12ths and links or 10ths and links if desired.

"UNIVERSAL" MEASURING TAPES

Fig. 710. Ass Skin Measuring Tapes

With One-half Inch Cotton Tape Waterproof Coated

Cases brass bound and sides handsomely cream enameled. Brass folding handles, brass rings and trimmings.

No.	710	711	712	713	714	715	716
Length.....feet	25	33	40	50	66	75	100
Weight per dozen.....lbs.	2 1/2	3	3 1/2	4	5	5 1/2	6 1/2
Price per dozen.....	\$3.75	4.00	4.50	5.00	6.00	7.50	9.00



Fig. 240. "Rival"

"RIVAL" STEEL MEASURING TAPES

Instantaneous Readings

Nickel plated steel cases, folding flush handle, opened by pressing pin on opposite side. Cases have knurled edges, which afford a firm hold when winding in tape. Measurements guaranteed accurate.



Fig. 1240. "Rival Junior"

WITH THREE-EIGHTH INCH TAPES Marked Feet, Inches and 8ths, One Side Only

No.	240	241	243	244	245	246
Length, feet.....	25	33	50	66	75	100
Wt. each, oz.....	7	9	11	14	16	19
Each.....	2.75	3.00	3.40	4.25	4.50	5.75

Marked Feet, 10ths and 100ths, One Side Only

No.	240D	241D	243D	244D	245D	246D
Length, feet.....	25	33	50	66	75	100
Wt. each, oz.....	7	9	11	14	16	19
Each.....	2.75	3.00	3.40	4.25	4.50	5.75

Fig. 1240 "RIVAL JUNIOR" STEEL MEASURING TAPES

Nickel plated steel cases, folding flush handle, opened by pressing pin on opposite side. Cases have knurled edges, which afford a firm hold when winding in tape. Accuracy guaranteed.

WITH ONE-QUARTER INCH TAPES Marked Feet, Inches and 16ths, One Side Only

No.	1240	1241	1243	1244	1245	1246
Length, feet.....	25	33	50	66	75	100
Wt. each, oz.....	4	5	6	8	9	11
Each.....	2.50	2.75	3.00	3.50	4.00	5.00

Marked Feet, 10ths and 100ths, One Side Only

No.	1240D	1241D	1243D	1244D	1245D	1246D
Length, feet.....	25	33	50	66	75	100
Wt. each, oz.....	4	5	6	8	9	11
Each.....	2.50	2.75	3.00	3.50	4.00	5.00

"UNIVERSAL" MEASURING TAPES

Patent Leather Cases

Brass folding handles, brass rings and trimmings

With One-Half Inch Cotton Tape Waterproof Coated

No.	810	811	812	813	814	815	816
Length, feet.....	25	33	40	50	66	75	100
Wt., per doz., lbs..	3	3 ½	3 ½	4 ¼	5 ¼	5 ½	6 ¾
Price per doz.	\$4.75	5.00	5.75	6.25	7.25	8.75	10.75

Marked Meters and Centimeters One Side Only

No.	811M	813M	814M	815M	816M
Length, meters.....	10	15	20	25	30
Wt. per doz., lbs.....	3 ½	4 ¼	5 ¼	5 ½	6 ¾
Price per doz.	\$5.00	6.25	7.25	9.50	10.75



Fig. 810. "Universal"



Fig. 3143

"MARVEL" POCKET STEEL TAPES

No. 3143—36 inches, ¼ inch wide, graduated in inches and 16ths. Nickel plated cases, spring wind with center stop. The "Marvel" sells itself from an attractive leatherette display box of one dozen tapes. The latest thing in pocket tapes, and a beautiful and durable article. Weight per gross, 10 ½ lbs.....per dozen \$3.00

ENGINEER'S STEEL TAPES

FIG. 233 ENGINEER'S PATTERN STEEL TAPES

Instantaneous Readings



Fig. 233. Leather Case

Metal lined hard leather cases, nickel plated trimmings, folding flush handle, opened by pressing pin on opposite side, two detachable rings. The tape can be readily detached from case, and we furnish an extra ring for the other end. The steel is heavier and stronger than used in the regular steel tapes, and the cases are thinner.

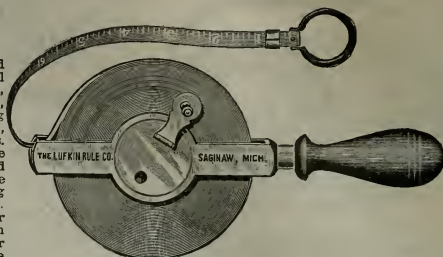


Fig. 273. Engineers'

Marked Feet, Inches and 8ths, One Side Only WITH ONE-QUARTER INCH TAPES

No.	231	233	234	235	236	237	238	239	240
Length, feet.....	33	50	66	75	100	33	50	66	75
Wt. each, oz.....	13	17	21	22	27	15	19	23	25
Each.....	5.00	6.00	8.00	9.50	12.00	5.00	6.00	8.00	9.50

Marked Feet, 10ths and 100ths, One Side Only WITH ONE-QUARTER INCH TAPES

No.	231D	233D	234D	235D	236D	237D	238D	239D	240D
Length, feet.....	33	50	66	75	100	33	50	66	75
Wt. each, oz.....	13	17	21	22	27	15	19	23	25
Each.....	5.00	6.00	8.00	9.50	12.00	5.00	6.00	8.00	9.50

Marked Metric One Side Only WITH ONE-QUARTER INCH TAPES

No.	231M	233M	234M	235M	236M	237M	238M	239M	240M
Length, feet.....	10	15	20	25	30	10	15	20	25
Wt. each, oz.....	13	17	21	23	27	15	19	23	26
Each.....	5.00	6.00	8.00	10.25	12.00	5.00	6.00	8.00	10.25

FIG. 273 ENGINEER'S PATTERN FRAME STEEL TAPES

Metal frames and trimmings, polished hardwood handles, two detachable rings. The tape can be readily detached from frame, and when so detached, the frame can be conveniently carried in pocket. Tapes less than 100 feet long are put up on two arm frames; tapes 100 feet and longer are put up on four arm frames.

WITH ONE-QUARTER INCH HEAVY TAPES Marked Feet, Inches and 8ths, One Side Only

No.	271	273	274	275	276	277	278
Length, feet.....	33	50	66	75	100	150	200
Wt. each, oz.....	17	20	21	24	30	38	48
Each.....	4.25	5.25	6.25	7.50	9.00	13.50	17.50

Marked Feet, 10ths and 100ths, One Side Only

No.	271D	273D	274D	275D	276D	277D	278D
Length, feet.....	33	50	66	75	100	150	200
Wt. each, oz.....	17	20	21	24	30	38	48
Each.....	4.25	5.25	6.25	7.50	9.00	13.50	17.50

Marked Metric One Side Only

No.	271M	273M	274M	275M	276M	277M
Length, feet.....	10	15	20	25	30	50
Wt. each, oz.....	17	20	21	25	30	41
Each.....	4.25	5.25	6.25	8.00	9.00	14.50

TAPE HOOKS

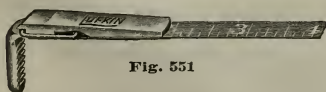


Fig. 551

For attaching to steel tapes. Measures from inside of hook.

No. 551. For 1/4 inch tapes.....each \$0.60
No. 552. For 3/8 inch tapes..... " .60

CLAMP HANDLES

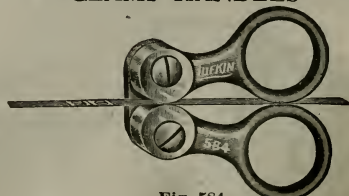


Fig. 584

For attaching to any part of a steel tape, enabling one to adapt it to any desired length. Brass, nicely nickel plated.

No. 584. Weight, 4 oz.....each \$1.00

REGULAR SCREW DRIVERS

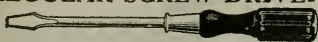


Fig. 20

These Screwdrivers are unsurpassed for strength and durability.

The blade, shank and head are one piece of special steel. Two patented projecting wings under the head, together with a rivet which passes through the ferrule, handle and shank, securely fastens the blade in the handle, preventing its turning (see cut).

They are made in two forms: One, in which the metal head comes clear through the handle, and one, designed for electricians, giving the same advantages of strength, but having the head countersunk in the handle and insulated by a non-conducting plug. All have finely tempered blades, and are well finished. The handles are fluted and stained black.

Length Blade, Ins.	Diameter Inches	Tip Inches	Size Over All, Inches	Package Quantity dozen	Weight lbs.	Per dozen
2 1/2	7/32	5/32	6 1/2	1 1/2	3 3/4	\$2.40
3	7/32	3/16	7	1 1/2	3 3/4	3.00
3 1/2	7/32	7/32	8	1 1/2	3 3/4	3.60
4	5/16	7/32	10	1 1/2	4 1/2	4.20
4 1/2	5/16	1/4	11 1/2	1 1/2	4 1/2	4.80
5	5/16	3/8	13 1/2	1 1/2	5 1/4	5.40
6	3/8	5/16	14 1/2	1 1/2	5 3/4	6.00
7	11/32	5/16	15 1/2	1 1/2	6 1/4	6.60
8	3/8	11/32	16 1/2	1 1/2	7 1/4	7.20
9	3/8	1/2	18 1/2	1 1/2	8 1/4	8.40
10	3/8	1/2	20 1/2	1 1/2	9 1/4	10.20
12	7/16	1/2	23 1/2	1 1/2	10 1/2	12.00
15	7/16	1/2	27 1/2	1 1/2	13 1/2	15.60
18	1/2	1/2	31 1/2	1 1/2	16 1/2	19.20
20	1/2	1/2	33 1/2	1 1/2	16 1/2	19.20
24	1/2	1/2	39 1/2	1 1/2	16 1/2	19.20

CABINET MAKERS SCREW DRIVERS

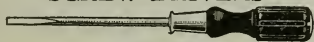


Fig. 40

In this form of Driver, the sides of the tip are parallel instead of being tapered, the width of the tip being the same as the diameter of the shank. This permits of a countersunk screw being followed up without marring or damaging the work. Same construction as Fig. 20.

Length Blade, Ins.	Diameter Inches	Tip Inches	Size Over All, Inches	Package Quantity dozen	Weight lbs.	Per dozen
2 1/2	7/32	7/32	6 1/2	1 1/2	3 3/4	\$2.40
3	7/32	7/32	7 1/2	1 1/2	3 3/4	3.00
3 1/2	7/32	9/32	8 1/2	1 1/2	3 3/4	3.60
4	7/32	1/4	10 1/2	1 1/2	4 1/2	4.20
4 1/2	7/32	1/4	11 1/2	1 1/2	4 1/2	4.80
5	3/8	1/4	12 1/2	1 1/2	4 1/2	5.40
6	3/8	1/4	13 1/2	1 1/2	5 1/4	6.00
7	3/8	1/4	14 1/2	1 1/2	5 3/4	6.60
8	3/8	1/4	15 1/2	1 1/2	6 1/4	7.20
9	3/8	1/4	16 1/2	1 1/2	6 1/4	7.80
10 1/2	3/8	1/4	17 1/2	1 1/2	7 1/4	8.40
12 1/2	3/8	1/4	20 1/2	1 1/2	10 1/2	12.00
15 1/2	3/8	1/4	23 1/2	1 1/2	13 1/2	15.60
18 1/2	3/8	1/4	27 1/2	1 1/2	16 1/2	19.20
24 1/2	3/8	1/4	33 1/2	1 1/2	16 1/2	19.20
30 1/2	3/8	1/4	39 1/2	1 1/2	16 1/2	19.20

"LEADER" SCREW DRIVERS

Have blades made of a fine quality of round steel, with the ends, which are engaged in the handles, squared, thus securely fastening them. The tips take the standard form throughout and neat, substantial ferrules are used. Handles stained red.



Fig. 50

Length Blade Inches	Size Over All Inches	Package Quantity dozen	Weight lbs.	Per dozen
2 1/2	6	1 1/2	3 3/4	\$1.20
3	7	1 1/2	5	1.32
4	8	1	1	1.66
5	9	1	1 1/4	1.88
6	11	1 1/2	2 1/4	1.92
7	12 1/2	2 1/2	3	2.16
8	14	3	3 3/4	2.28
9	16	4 1/2	5 1/4	2.40
10	18	6 1/2	8 1/4	2.76
12	18 1/2	7 1/2	8 1/4	2.76

SMALL SHANK SCREW DRIVERS

This line of Screwdrivers is designed for light and delicate work. The blades are made of very small stock and the tapered tips of a proportionate size. The handles are short and of small diameter so that they just fit the palm of the hand, permitting the owner to use his thumb and forefinger against the shoulder (near the ferrule) when turning screws requiring delicate adjustment.

The No. 55 is particularly adapted for light electrical work, as the tip fits the countersink in the porcelain fittings.



Fig. 50



Fig. 55

The handles are short and of small diameter so that they just fit the palm of the hand, permitting the owner to use his thumb and forefinger against the shoulder (near the ferrule) when turning screws requiring delicate adjustment.

The No. 55 is particularly adapted for light electrical work, as the tip fits the countersink in the porcelain fittings.

Length Blade, Ins.	Diameter Inches	Tip Inches	Size Over All Inches	Package Quantity dozen	Weight lbs.	Per dozen
1 1/2	5/32	1/8	4	1 1/2	1 1/2	\$2.40
2 1/2	5/32	1/8	5	1 1/2	1 1/2	2.40
3 1/2	5/32	1/8	6 1/2	1 1/2	1 1/2	3.00
4	5/32	1/8	7 1/2	1 1/2	1 1/2	3.60
4 1/2	5/32	1/8	8 1/2	1 1/2	1 1/2	4.20
5	5/32	1/8	9 1/2	1 1/2	1 1/2	4.80
5 1/2	5/32	1/8	10 1/2	1 1/2	1 1/2	5.40
6	5/32	1/8	11 1/2	1 1/2	1 1/2	6.00
7	5/32	1/8	12 1/2	1 1/2	1 1/2	6.60
8	5/32	1/8	13 1/2	1 1/2	1 1/2	7.20
9	5/32	1/8	14 1/2	1 1/2	1 1/2	7.80
10	5/32	1/8	15 1/2	1 1/2	1 1/2	8.40
12	5/32	1/8	17 1/2	1 1/2	1 1/2	8.40

Where width of tip is given, it is approximately correct.

MACHINISTS' SCREW DRIVERS

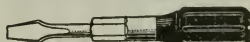


Fig. 53 1/2



Fig. 51

Fig. 21

Fig. 51 1/2

Our Machinists' Screw Drivers are especially adapted for heavy work where a long driver cannot be conveniently used. Nos. 51 1/2, 52 1/2, 53 1/2 and 54 are made with a hexagonal shank for use with a wrench. No. 54 has a long double grip handle. The handles are fluted and stained black.

No. 51. 1 1/4 inch blade, 3/8 inch diameter, 9/32 inch tip, 5 1/4 inches over all; 1/2 dozen in 1 1/4 lb. package.....per dozen	\$4.20
No. 52. 3 inch blade, 7/16 inch diameter, 15/32 inch tip, 7 1/4 inches over all; 1/2 dozen in 2 lb. package.....per dozen	6.60
No. 53. 4 inch blade, 1/2 inch diameter, 1/2 inch tip, 9 1/4 inches over all; 1/2 dozen in 4 1/4 lb. package.....per dozen	8.40
No. 51 1/2. 1 1/2 inches blade, 3/8 inch diameter, 9/32 inch tip, 5 1/2 inches over all; 1/2 dozen in 2 lb. package.....per dozen	7.20
No. 52 1/2. 2 1/2 inch blade, 7/16 inch diameter, 15/32 inch tip, 7 1/4 inches over all; 1/2 dozen in 3 lb. package.....per dozen	8.40
No. 53 1/2. 3 1/2 inch blade, 1/2 inch diameter, 1/2 inch tip, 9 3/16 inches over all; 1/2 dozen in 4 1/4 lb. package.....per dozen	10.20
No. 54. 10 inch blade, 1/2 inch diameter, 1/2 inch tip, 18 inches over all; 1/2 dozen in 8 1/2 lb. package.....per dozen	18.00

Our "Baby" Screwdriver No. 21 is a handy little tool for the vest pocket, only four inches long over all and will work a good sized screw. Same design as the regular screwdrivers, thus insuring strength. The handle is fluted and stained black.

No. 21. 1 1/4 inch blade, 7/32 inch diameter, 5/32 inch tip, 4 inches over all; weight, 1/2 dozen, 1/2 lb.per dozen \$2.40

Packed 1/2 Dozen in Box

SCREW DRIVERS—DRILLS

GOODELL PATENT AUTOMATIC
INTERCHANGEABLE
SCREWDRIVER

Fig. 3

Each with Three Bits

No. 1. Length extended, 14 inches.....	each	\$1.75
No. 2. Length extended, 16 inches.....	"	2.00
No. 3. Length extended, 18 inches.....	"	2.25
Extra bits	"	.20

"PERFECT" HANDLE SCREWDRIVER



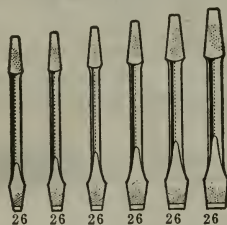
Fig. 12

"All Its Value in Plain Sight"

Blade length, inches....	2	3	4	5	6
Diameter	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Per dozen.....	\$4.25	4.25	4.25	5.00	6.00

Blade length, inches.....	7	8	10	12
Diameter	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$
Per dozen	\$7.00	8.00	10.00	12.00

SCREWDRIVER BITS



These Bits are forged from crucible steel, oil tempered and polished.

Size	Tip inches	Quantity dozen	Package Weight lbs.	Per dozen
4 $\frac{1}{2}$	$\frac{1}{4}$	1	1	\$1.40
4 $\frac{3}{4}$	$\frac{3}{8}$	1	1 $\frac{1}{4}$	1.40
5	$\frac{1}{2}$	1	1 $\frac{1}{2}$	1.40
5	$\frac{3}{4}$	1	1 $\frac{3}{4}$	1.40
5	$\frac{1}{2}$	1	2 $\frac{1}{4}$	1.40
5	$\frac{3}{4}$	1	2 $\frac{1}{4}$	1.40
Assorted	Assorted	1	1 $\frac{1}{2}$	1.40

Packed 1 Dozen in Package.

COUNTERSINKS

These tools cut very rapidly and can be readily re-sharpened. The depth gauge is a very convenient attachment. Nos. 18, 20 and 22, are made of malleable iron, nickel plated.

Nos. 23 and 24 are very superior tools, made of steel forgings and given a blued finish.

No. 18. Countersink. Nickel plated. Weight package, $\frac{3}{4}$ lb., per dozen \$2.28

No. 20. Countersink. Nickel plated. With depth gauge. Weight, package, 1 lb., per dozen 3.12

No. 23. Countersink. Steel forging. Weight, package, $\frac{3}{4}$ lb., per dozen 3.24

No. 24. Countersink. Steel forging. With depth gauge. Weight, package, 1 lb., per dozen 3.12

Packed $\frac{1}{2}$ Dozen in Package

Fig. 24

FOR BIT BRACES AND CUTTING TOOLS, SEE INDEX

TOOL SETS

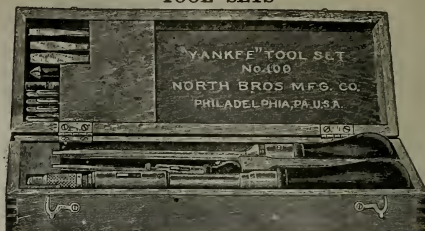


Fig. 100

In response to frequent demands for screw drivers put up in substantial and well finished boxes, to be used by mechanics who desire to keep tools in fine order, and by gentlemen or amateur mechanics who especially appreciate tools put up in handsome sets, we offer the set as illustrated above. The box, which is very substantially made of oak, handsomely finished, contains one each of the following tools.

No. 30 Spiral Ratchet Screw Driver. Chuck, with drill points, eight sizes, $\frac{1}{16}$, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$ inches, to use for drilling holes with the No. 30 spiral ratchet screw driver.

No. 11 Ratchet Screw Driver, with blade 6 inches long. No. 15 Ratchet Screw Driver, with finger turn on blade, with blade 3 inches long.

These are the styles and sizes of tools most in demand, and the combination in a set covers all the usual requirements in tools for driving and drawing out screws. The tools are easily removed from box, and when it is closed are held firmly in place.

The box measures 12 $\frac{1}{2}$ x 4 $\frac{1}{2}$ x 2 $\frac{1}{2}$ inches. Weight, 3 $\frac{1}{4}$ lbs. List price..... per set \$4.85

RECIPROCATING DRILL



Fig. 50

Designed for use in drilling in steel, iron, brass and other metals, as well as all varieties of woods. It is so constructed that the drill runs continuously to the right, during both the forward and backward movement of the driver, hence drills continuously. The pressure to feed the drill is had by the pressure against the head of the tool, which is provided with ball bearing to reduce the friction. While lighter in weight, and therefore more convenient in use, it is in all essential points stronger than other apparently similar tools. The chuck is of new design, has three jaws, is accurate, stronger and more durable than similar chucks, and will not get out of order.

No drill points are furnished with this tool—the user furnishing such quality, style and size best suited for work required in wood, iron, steel, brass, etc. The chuck will hold any drill with straight shank $\frac{1}{8}$ inch diameter or less. To open or close chuck move the driver up to chuck, push down the catch in lower end of driver, which holds fast the driver on spindle. After drill is put in chuck and tightened, push up the catch, releasing driver from spindle so it can be moved backward and forward to operate drill.

The movement or traverse of the driver is $\frac{3}{4}$ inches. The entire length of tool without drill is 16 inches. Packed one in strong paper box. Weight per dozen, in paper box, 15 lbs.

Price each \$2.75

RATCHET SCREWDRIVER

With Screw Holder Attachment Right and Left Hand, and Rigid

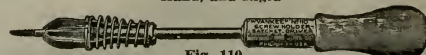


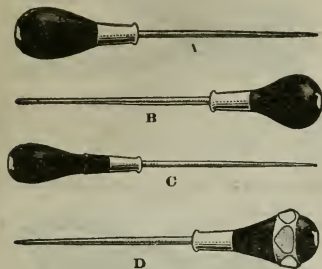
Fig. 110

Fig. 110. Ratchet Screw Driver with screw holder attachment. Packed one-half dozen in box

Sizes Length of Blade, in.	Entire Length inches	Weight per Doz. in paper boxes	Price each
3	7 $\frac{1}{4}$	4 lbs. 0 oz.	\$0.65
4	8 $\frac{1}{4}$	4 lbs. 8 oz.	.70
5	9 $\frac{1}{4}$	5 lbs. 8 oz.	.75
6	11 $\frac{1}{4}$	5 lbs. 13 oz.	.85
8	13 $\frac{1}{4}$	6 lbs. 10 oz.	.95

NAIL SETS, PUNCHES, AWLS, REELS, ETC.

ICE PICKS



The blade, shank and head are formed of one piece of steel. Two patented projecting wings under the head, together with a rivet which passes through the ferrule, handle and shank, securely fastens the blade in the handle. The needle points being carefully tempered, no chipping is necessary, simply push the point through the ice. Handles stained black. No. D, Ice Pick, has an iron band around the handle which will be found convenient for breaking the ice into small pieces. Its hexagonal form prevents the pick from rolling when laid down.

No. A. Ice Pick, 5½ inch blade, 7/32-inch diameter, needle point; ½ dozen in 1½ lb. package. Per dozen.....	\$3.18
No. B. Ice Pick, 5½ inch blade, 7/32-inch diameter, needle point; ½ dozen in 1½ lb. package. Per dozen.....	3.48
No. C. Ice Pick, 5½ inch blade, 5/32-inch diameter, needle point, ½ dozen in 1 lb. package. Per dozen.....	3.12
No. D. Ice Pick, 5½ inch blade, 7/32-inch diameter, needle point, ½ dozen in 2 lb. package. Per dozen.....	4.56

MAGNETIZED TACK HAMMERS

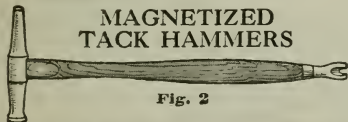


Fig. 2

The heads, with the exception of No. 4, are magnetized, which enables the user to easily locate and pick up the smallest of tacks. The head, handle and claw of No. 4 is one piece of malleable iron. The sides of the handle are inlaid with two wooden strips securely riveted in place, and all metal parts are plated.

No. 1. 10 inch, hardwood handle, 3½-inch head, 1 dozen in 3½ lb. package.....	per doz. \$1.25
No. 2. 11½ inch, hardwood handle, 4-inch head, 1 dozen in 1¼ lb. package.....	per doz. 1.50
No. 3. 11½ inch, hardwood handle, 4½-inch head, 1 dozen in 5 lb. package.....	per doz. 1.75
No. 12. 10 inch, iron handle, 3½-inch head, 1 dozen in 5½ lb. package.....	per doz. 1.25
No. 4. 10½ inch, inlaid handle, 4-inch head, 1 dozen in 5¼ lb. package.....	per doz. 2.50

CHALK LINE REELS

Made of hardwood and polished. With Nos. 13 and 15 are furnished 60 feet of strong, white cord, and with Nos. 14 and 15, a Stanley No. 1 Scratch Awl.

No. 11. 4 inches long, 2¼-inch diameter. 1 dozen in 2 lb. package.....	per gross \$10.80
No. 12. 3 inches long, 2-inch diameter. 3 dozen in 3½ lb. package.....	per gross 4.30
No. 13. 3 inches long, 2-inch diameter, 60 ft. line. 1 dozen in 1½ lb. package.....	per gross 21.00
No. 14. 3 inches long, 2-inch diameter, scratch awl. 1 dozen in 2½ lb. package.....	per gross 11.40
No. 15. 3 inches long, 2-inch diameter, 60 ft. line and scratch awl. 1 dozen in 3½ lb. package.....	per gross 27.00



Fig. 15

AWL HAFTS AND HANDLES

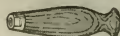


Fig. 6½

No. 6. Fig. 6½ Awl Haft, leather top, steel chuck, 1 dozen in 2 lb. package.....	per gross \$12.00
No. 6½. Sewing Haft, plain top, steel chuck, 1 dozen in 2 lb. package.....	per gross 12.00

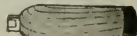


Fig. 6

AWLS

These Awls have blade, shank and head formed of one piece of steel. Two patented projecting wings under the head, together with a rivet which passes through the steel ferrule, handle and shank, securely fastens the blade in the handle. The handles are stained black. All points are carefully tempered.

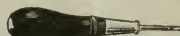


Fig. 17

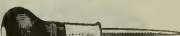


Fig. 6

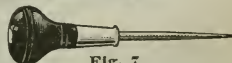


Fig. 7

No. 17. Brad Awl, 1¼-inch to 1½-inch assorted, flat point, 1 dozen in 1½ lb. package.....	per doz. \$3.00
No. 6. Scratch Awl, 3¼-inch blade, ¼-inch diameter, needle point, ½ dozen in ½ lb. package.....	3.00
No. 7. Scratch Awl, 3¼-inch blade, ¼-inch diameter, needle point, ½ dozen in 1½ lb. package.....	per doz. 3.21

NAIL SETS AND CENTER PUNCHES



Fig. 11



Fig. 10

These are made of the finest grade of special tool steel obtainable that can be used in making tools of this class. They are hardened at both ends and blued. The tips or points are carefully oil tempered and will stand the most severe test under all conditions.

The head is so shaped that there is little possibility of hammer slipping from the tool.

These tools are packed in boxes, assorted sizes, or can be purchased singly.

In ordering, give number and size of tip desired.

These Nail Sets have tips that are cupped and the edges are nicely rounded. The three smaller sizes have the same diameter shank—a heavier shank is used in the larger size.

No. 11. Nail Sets, 4 inches long, 2/32 inch tips, 12 only in ¾ lb. package.....	per doz. \$1.40
No. 11. Nail Sets, 4 inches long, 5/64-inch tips, 12 only in ¾ lb. package.....	per doz. 1.40
No. 11. Nail Sets, 4 inches long, 3/32-inch tips, 12 only in ¾ lb. package.....	per doz. 1.40
No. 11. Nail Sets, 4 inches long, 4/32 inch tips, 12 only in 1½ lb. package.....	per doz. 1.40

Also regularly packed in attractive display boxes, assorted as follows:

No. 11A. Assorted sizes, 5/2/32, 3/5/64, 4/3/32-inch tips. 12 only in ¾ lb. package.....	per box \$1.40
No. 11B. Assorted sizes, 5/2/32, 6/5/64, 7/3/32, 3/4/32-inch tips. 24 only in 1½ lb. package.....	per box 2.80
No. 11C. Assorted sizes, 10/2/32, 8/5/64, 11/3/32, 7/4/32-inch tips. 36 only in 2½ lb. package. Per box.....	4.20

These Center Punches have tips accurately shaped so that the extreme point is always in the center of the tool. The two smaller sizes have the same diameter shank; a heavier shank is used in the larger size.

No. 10. Center Punches, 4 inches long, 5/64-inch tips. 12 only in ¾ lb. package.....	per doz. \$1.40
No. 10. Center Punches, 4 inches long, ¼-inch tips. 12 only in ¾ lb. package.....	per doz. 1.40
No. 10. Center Punches, 4 inches long, 5/32-inch tips. 12 only in ¾ lb. package.....	per doz. 1.40

Also regularly packed in attractive display boxes, assorted as follows:

No. 10A. Assorted sizes, 4/5/64, 4/4, 4/5/32-inch tips. 12 only in ¾ lb. package.....	per box 1.40
No. 10B. Assorted sizes, 3/5/64, 8/4, 8/5/32-inch tips. 24 only in 1½ lb. package.....	per box 2.80
No. 10C. Assorted sizes, 12/5/64, 12/4, 12/5/32-inch tips. 36 only in 2½ lb. package.....	per box 4.20

FOR HAMMERS, NAILS, AND TACKS, SEE INDEX

UTICA BOX JOINT SIDE CUTTING PLIER



Fig. 2050.

No. 2050. Designed to give great leverage as well as the proper "hang" in the workman's hand. Utica Finish.

Size, inches.....	5	6	7	8
Price, per doz.....	\$12.20	13.60	16.00	19.00

UTICA STANDARD SIDE CUTTING PLIER



Fig. 50

No. 50. Is the ideal tool for electrical construction work. It is lighter in weight than the ordinary Side Cutting Plier but so skillfully tempered that the handles will not bend or set when great pressure is exerted on them. Utica Finish.

Size, inches.....	4	5	6	7	8
Price, per doz.....	\$8.40	9.00	9.80	11.80	13.30

UTICA LONG CHAIN NOSE SIDE CUTTING PLIER



Fig. 654

No. 654. Forged from a fine quality of steel. The nose is spring-tempered. It is an ideal tool for use by Telephone Manufacturers, Machinists, Jewelers, Opticians, Electricians, etc.. The nose is not quite so sharp as No. 655. Utica Finish.

Size, inches.....	5 1/4	6 1/4
Price, per doz.....	\$11.80	15.60

No. 655. Price, per doz..... 12.50 15.60

UTICA MILLINER'S PLIER

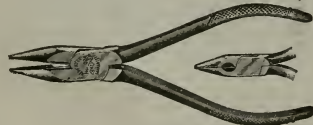


Fig. 024

No. 024. A Short Chain Plier for use by Milliners, Hat Frame Makers and Artificial Flower Makers. Utica Finish.

Size, inches.....	4	5
Price, per doz.....	\$9.00	9.40

UTICA DIAGONAL CUTTING PLIER



Fig. 42

No. 42. Is used by Telephone Men, Switchboard Builders and Electricians in assembling all kinds of electrical apparatus. The cutting edges are designed so they will cut silk covered wire without injuring the covering or bruising the wire. Utica Finish.

Size, inches.....	3 1/4	4	4 1/4	5	5 1/4	6	6 1/4
Price, per doz.....	\$9.60	10.20	11.60	12.80	14.40	16.40	18.00

UTICA LINEMAN'S HEAVY SIDE CUTTING PLIER



Fig. 1950.

No. 1950. One of the best Side Cutting Pliers made. It is a general favorite with linemen, owing to the shape of the handles and the keen, strong cutting edges, and its adaptability to all kinds of work where a Heavy Side Cutting Plier is used. Utica Finish.

Size, inches.....	6	7	8	9
Price, per doz.....	\$12.80	15.80	18.40	25.20

UTICA SHORT CHAIN NOSE MACHINIST'S PLIER



Fig. 622

No. 622. This Plier is a Short Chain Nose Side Cutting Plier, an ideal tool for the machinist or mechanic requiring a light, strong Side Cutting Plier with a spring-tempered nose. Utica Finish.

Size, inches.....	5
Price, per doz.....	\$9.60

UTICA JEWELER'S LONG CHAIN NOSE PLIER



Fig. 33

No. 33. A long, spring-tempered Chain Nose Plier for use by Jewelers, Opticians, Electricians and Assemblers of Typewriters and small electrical apparatus, and in various other kinds of work where a high quality of Long Chain Nose Plier is used. It has no side cutter, and has blunter noses than No. 1033. Utica Finish.

Size, inches.....	5 1/4	6 1/4
Price, per doz.....	\$10.30	15.60

UTICA LONG REACH FLAT NOSE SIDE CUTTING PLIER



Fig. 650.

No. 650. A strong, long Flat Nose Side Cutting Plier, indispensable for working in deep and narrow places. Used by Telephone and Switchboard Builders and Electrical Workers of all kinds. Utica Finish.

Size, inches.....	5 1/4	6 1/4
Price, per doz.....	\$11.00	15.60

UTICA COMPOUND END CUTTING NIPPER



Fig. 3

No. 3. This Nipper is used by Tool-makers, Machinists, Jewelers, Florists, Piano and Spring Bed Manufacturers, Bicycle and Typewriter Makers, and Repairmen in general. Jaws for cutting music wire can also be furnished. Utica Finish.

Size, inches.....	4 1/4	5 1/4	7 1/4	9
Price, per doz.....	\$15.60	17.00	20.80	25.00

FOR GENUINE KLEIN PLIERS, SEE INDEX

UTICA STANDARD SIDE CUTTING AND SPlicing PLIER



Fig. 350

No. 350. This is the Utica Standard Side Cutting Plier, with Splicing Clamps or Sleeve Twister between the handles that will take the sleeve without bruising or crushing either sleeve or wire. Utica Finish.

Size, inches.....	6	7	8
Price, per doz.....	\$10.40	12.80	14.60

UTICA FLAT JAW LOOMFIXER'S PLIER



Fig. 32

No. 32. A long slender, spring-tempered Flat Nose Plier. For use by Loom fixers, Weavers, Knitters, and on various other kinds of mill work where a high quality spring-tempered Flat Nose Plier is used. Utica Finish.

Size, inches.....	5½	6½
Price, per doz.....	\$11.00	15.60

UTICA GIANT BUTTON'S PLIER



Fig. 1000

No. 1000. The original Button's Plier, with four wire cutters. The two cutters between the jaws are so designed that the wire after it is cut is held between the jaws. This feature adds to the utility of the tool and the advantage of handling the wire with less trouble is evident. Utica Finish.

Size, inches.....	4½	6	8	10
Price, per doz.....	\$5.60	6.40	8.20	10.20

UTICA BULL DOG END CUTTING NIPPER



Fig. 60

No. 60. This Plier is forged from a fine grade of steel, carefully tempered, and is a strong, easy cutting Nipper. Used by the Carpenter, Shoemaker, Machinist, and other mechanics who require a high quality End Cutting Nipper that will hold its edge. Utica Finish.

Size, inches.....	5	6	7
Price, per doz.....	\$10.70	12.00	14.40

UTICA NICKEL PLATED COMBINATION PLIER



No. 5002-4000. Note the heavy, well-shaped handles, made to fit the hand, so that great pressure can be exerted when the Plier is open. All handle-spring, on any possible set, is eliminated. The grip has milled teeth, designed to hold firmly when a slight pressure is exerted.

No. 4000. Utica Finish

Size, inches.....	6	8
Price, per doz.....	\$5.70	10.70

No. 5002. Nickel Finish

Size, inches.....	6
Price, per doz.....	\$4.00

UTICA JEWELER'S END CUTTING NIPPER



Fig. 65

No. 65. Forged from a fine grade of steel, carefully tempered. A light, strong, End Cutting Nipper, used by Jewelers, Opticians, Electricians and Machinists. Utica Finish.

Size, inches.....	3½	4	4½	5
Price, per doz.....	\$9.00	9.40	9.80	10.20

No. 465 is No. 65 with flush cutting edge.

UTICA LONG NEEDLE NOSE PLIER



Fig. 777

No. 777. This Plier has a long, half-round, spring-tempered nose, and is especially adapted to fine work. On switchboard work and in assembling small electrical apparatus it is indispensable. Utica Finish.

Size, inches.....	5½	6½
Price, per doz.....	\$11.80	15.60

UTICA LINEMAN'S HEAVY SIDE CUTTING AND SPlicing PLIER



Fig. 3050

No. 3050. The regular Utica Lineman's Heavy Side Cutting Plier with the Utica Special Splicing Clamp or Sleeve Twister between the handles that will make the regular or combination sleeve of any size without bruising or crushing the wire or the sleeve. Utica Finish.

Size, inches.....	6	7	8	9
Price, per doz.....	\$13.40	16.40	18.20	28.00

UTICA COMPETITION BUTTON'S PLIER



Fig. 300

No. 300. Is a Competitive Button's Plier in a black finish with smooth handles. The quality is of the regular Utica Standard, and for all ordinary purposes this is a very serviceable tool. Black Finish.

Size, inches.....	4½	6	8	10
Price, per doz.....	\$3.60	4.50	5.20	7.20

UTICA COMPETITION SIDE CUTTING PLIER



Fig. 1050

No. 1050. This Plier is made along the same lines as our No. 50, with the exception that it is not so nicely finished. Utica finish.

Size, inches.....	4	5	6	7	8
Price, per doz.....	\$5.80	7.00	8.60	10.00	12.00

PLIERS AND NIPPERS

UTICA BOX JOINT SLIP JOINT PLIER



Fig. 6006

No. 6006. This tool has many advantages over the ordinary Slip Joint Plier. The jaws are so constructed that they will adjust themselves to any taper, half-round, round, three-square, or parallel. The flat side always lays itself to the lower jaw, which is straight. This construction gives great gripping power and strength. It will do all the work of a parallel Plier and many things such a Plier will not do. It also makes a good Side Cutting Plier. It has the checkered handles. Utica finish.

Size, inches	6	8
Wt. per doz., lbs.	6 1/2	8
Price, per doz.	\$9.00	12.00

UTICA CURVED NEEDLE NOSE PLIER



Fig. 888

No. 888. The long, curved, spring-tempered nose enables one to use the Plier in deep or narrow places without turning or twisting the hand, as in assembling jigs, fixtures, electrical apparatus, typewriters, etc. Utica finish.

Size, inches	5 1/2	6 1/2
Wt. per doz., lbs.	2 1/2	3 1/2
Price, per doz.	\$12.90	15.60

UTICA ROUND END COMBINATION BURNER PLIER



Fig. 325

No. 325. This Burner Plier is used by Plumbers, Electricians and Machinists, and makes a good all-round tool. The teeth in the burner grip are milled, the cutting edges are keen. Utica finish.

Size, inches	5	5 1/2
Wt. per doz., lbs.	3 1/2	3 3/4
Price, per doz.	\$8.60	9.30

UTICA ROUND NOSE PLIER



Fig. 21

No. 21. This short, round Nose Plier is forged from a fine quality of steel, carefully tempered. It is used by Jewelers, Watchmakers, Opticians and in various other kinds of work where a light high quality round Nose Plier, that rests in the hand with the proper "hang," is required.

Utica Finish

Inches	3	4	4 1/2	5	5 1/2	6
Wt. per doz., lbs.	1 1/4	1 1/2	2	2 1/2	3 1/4	4 1/2
Price, per doz.	\$5.20	5.50	5.70	6.00	6.50	7.10

No. 210. Light Pattern Black Finish

Inches	3	4	4 1/2	5	5 1/2	6
Wt. per doz., lbs.	1 1/4	1 1/2	2	2 1/2	3 1/4	4 1/2
Price, per doz.	\$3.20	3.30	3.40	3.60	3.80	4.00



Fig. 60

FOR GENUINE KLEIN PLIERS, SEE INDEX

UTICA UNIVERSAL PLIER



Fig. 700

No. 700. The Universal Plier in the fullest sense of the word. It has a Wire Cutter on each side of the Joint that will cut—not mash—the wire. It also has a Side Cutter for cutting large or insulated wire. The Burner Grip has milled teeth that will grip and hold firmly with very little pressure on the handles. Utica finish.

Size, inches	7
Wt. per doz., lbs.	8 1/2
Price, per doz.	\$12.40

UTICA GAS AND BURNER PLIER

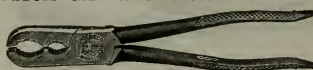


Fig. 1300

No. 1300. This Plier was designed to meet the ever increasing demand for a Quality Gas and Burner Plier. It has a larger capacity than the ordinary Gas and Burner Plier. The handles are so shaped that in grasping a large pipe a firm grip may be had with very little pressure on the handles. Utica finish.

Size, inches	5	6	7	8	10
Wt. per doz., lbs.	4	5	6 1/2	9 1/2	15 1/2
Price, per doz.	\$6.00	6.80	7.80	8.40	10.80

UTICA FLAT NOSE PLIER



Fig. 20

No. 20. This is a short Flat Nose Plier for use by Jewelers, Watchmakers, Opticians and Mechanics requiring a high quality Plier of this style.

Utica Finish

Size, inches	3	4	4 1/2	5	5 1/2	6
Wt. per doz., lbs.	1 1/4	1 1/2	2	2 1/2	3 1/4	4 1/2
Price, per doz.	\$5.20	5.50	5.70	6.00	6.50	7.10

No. 200. Light Pattern Black Finish

Size, inches	3	4	4 1/2	5	5 1/2	6
Wt. per doz., lbs.	1 1/4	1 1/2	2	2 1/2	3 1/4	4 1/2
Price, per doz.	\$3.20	3.30	3.40	3.60	3.80	4.00

UTICA SHORT CHAIN NOSE PLIER



Fig. 22

No. 22. It is used by Jewelers, Watchmakers, Opticians, Electricians, and in various other kinds of work where a light, high quality Chain Nose Plier with the proper "hang" is required.

No. 22. Utica Finish

Size, inches	3	4	4 1/2	5	5 1/2	6
Wt. per doz., lbs.	1 1/4	1 1/2	2	2 1/2	3 1/4	4 1/2
Price, per doz.	\$5.20	5.50	5.70	6.00	6.50	7.10

No. 220. Light Pattern Black Finish

Size, inches	3	4	4 1/2	5	5 1/2	6
Wt. per doz., lbs.	1 1/4	1 1/2	2	2 1/2	3 1/4	4 1/2
Price, per doz.	\$3.20	3.30	3.40	3.60	3.80	4.00

CAREW'S PATENT WIRE CUTTERS

Size, inches	8	10	12	14
Each	2.00	2.25	2.60	3.00
Extra Jaws				
Size, inches	8	10	12	14
Per pair	.60	.65	.70	.75

BERNARD'S PLIERS—PAPER BALERS

No. 100. "BERNARD" FLAT NOSE



Fig. 521A

Size, inches.....	4½	5	5½	6	6½	7	8
Per doz.....	\$6.00	7.00	8.00	9.00	10.00	11.00	14.00

No. 125. "BERNARD" END CUTTING NIPPERS

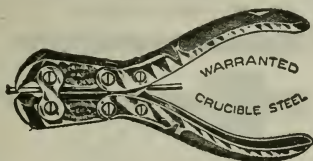


Fig. 521C

Its compound system of leverage gives this tool a very high power.

Size	inches	4	5	6	7	8
Price.....per doz.		\$11.00	14.00	17.00	20.00	25.00
Price	each	1.10	1.40	1.70	2.00	2.50
Extra Jaws.....	doz.	4.50	5.50	6.50	7.50	9.00
Extra Bolts & Nuts..	"	.45	.50	.55	.60	.70
Extra Set Screws..	"	.20	.25	.30	.35	.45
Extra Jaw Straps..	"	.55	.60	.65	.70	.80
Extra Handles....	pair	2.50	4.00	5.50	7.00	9.00

No. 102. "BERNARD" CUTTING PLIERS

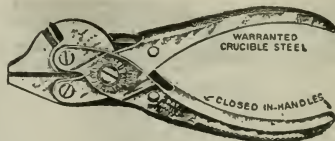


Fig. 521B

Size, inches.....	4½	5	5½	6	6½	7	8
Per doz.....	\$11.50	13.00	14.50	16.00	17.50	19.00	23.50

COTTER PIN TOOL

Nickel Plated

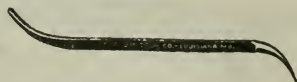


Fig. 521D

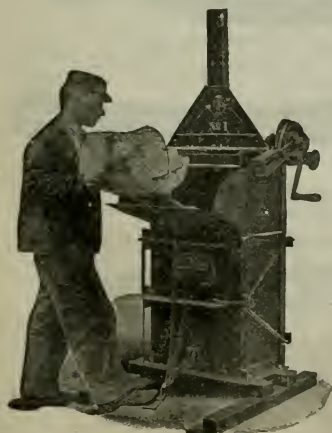
One end for pulley cotter pins, the other for spreading cotter pins. In general use by all engineers.

Size inch square	Length inches	Price per dozen
¼	7	\$2.00
½	7	2.25

PAPER BALERS

SELL YOUR WASTE PAPER AT TOP MARKET PRICES

With waste paper worth \$13.50 to \$45.00 a ton—you cannot afford to waste a single pound. Paper mills everywhere are begging for raw materials—the U. S. Department of Commerce has issued a circular urging everyone to save old papers and rags.



Economy Baling Presses Successfully Bale—

Paper, rags, wool, waste, cotton, bags, burlap, rugs, blankets, dry goods, clothing, findings, leather, tobacco stems, hides, furs, hay, straw, hair, excelsior, moss, wood pulp, broom corn, manure, hemp, hops, fodder, flax, shavings, fluffy steel turnings, wire, metal scrap, tin cans, etc.

We can furnish special balers to meet practically any purpose and condition, to be operated by hand, belt drive or directly connected motor.

Equipped with special fire tight baling case and automatic closing hopper.

A strictly fire-proof waste vault that not only reduces your fire risks, but helps keep your floors, offices and basements neater and cleaner, and pays a handsome dividend on your investment, on the sale of waste paper.

Number	Makes Bales	Price
14	16x18x30	\$55.00
15	14x16x28	70.00
3	16x20x30	100.00
1	.....	115.00
30	30x16x30	170.00
2	20x24x32	200.00
36	36x20x38	300.00
45	45x24x38	360.00

GENUINE KLEIN ELECTRICAL CONSTRUCTION TOOLS

"DIAMOND SPECIAL" SIDE CUTTING PLIERS

KLEIN'S "DIAMOND SPECIAL" SIDE CUTTING PLIERS

KLEIN'S "DIAMOND SPECIAL" SIDE CUTTING PLIERS, WITH SLEEVE TWISTER



Fig. 201-5

No.	Size	Weight per doz.	Price per doz.
201-5.	5 inch.....	3 lbs.	\$16.75
201-6.	6 inch.....	5 lbs.	20.85
201-7.	7 inch.....	7½ lbs.	25.00
201-8.	8 inch.....	12 lbs.	30.00
201-9.	9 inch.....	12½ lbs.	33.35
201-10.	10 inch.....	18 lbs.	36.75

Standard Type of Linemen's Pliers. They have Knives that are sharp.

All Pliers Packed One in a Carton. Have Polished Heads and Black Handles.



Fig. 212-7

No.	Size	Weight per doz.	Price per doz.
212-7.	7 inch.....	7½ lbs.	\$28.00
212-8.	8 inch.....	12 lbs.	32.00
212-9.	9 inch.....	13 lbs.	36.00

The Sleeve Twister in the 7 inch size is for No. 12 sleeves, B. & S. gauge. The Sleeve Twister in the 8 inch size is for No. 10 sleeves, B. & S. gauge. The Sleeve Twister in the 9 inch size is for No. 10 sleeves, B. & S. gauge.

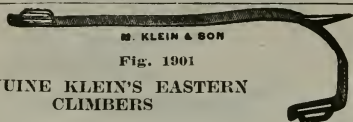


Fig. 1901

GENUINE KLEIN'S EASTERN CLIMBERS

No.	Avg. Wt. Per pair	Price per doz.
1901.....	3½ lbs.	\$32.00

Lengths from 15 to 18 inches, from the instep to the end of shank, by ½ inch variations. No. 1901 style has punched strap loops.

Polished and nickel plated, extra per pair, net \$1.00.

Polished and nickel plated on copper, extra per pair, net \$1.25.

TOOL BELT

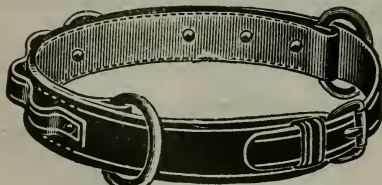


Fig. 5205

No.	Size	Weight per doz.	Price per doz.
5205.	2½ inch.....	24 lbs.	\$26.00

Made of select harness leather. The inner layer carries the "D" rings and is lock stitched and riveted to the outer layer which also passes through the "D" rings and is provided with a strong buckle. The outer loop layer is 1½ inch wide and has 6 loops. This arrangement makes a doubly safe belt.

KLEIN'S COMBINATION STEEL LAG SCREW WRENCHES



Fig. 3109-20

No.	Size	Weight per doz.	Price per doz.
3109-20.	13½ inch.....	20 lbs.	\$24.00

These wrenches are forged from select bar steel. The slot is formed in a cross shape, and will fit machine bolts, nuts or lag screws from ¾ inch to 1 inch. The small end of the wrench is arranged for ¾ inch machine bolts or lag screws. The round hole allows the end of a bolt to come through as the nut is run on.

The jaw is wider at its upper portion and when this wrench is put on a nut or bolt the tendency is to draw the bolt-head or nut into the wrench and prevent slipping off. The extra work in attaining the inward taper is what makes the No. 3109-20 wrench cost more than the 3110-20.

FOR OTHER STYLES OF PLIERS,

KLEIN STRAPS FOR EASTERN CLIMBERS

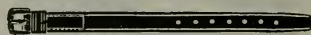


Fig. 5301-1

No.	Weight per doz. sets	Price per doz. sets
5301-1.....	15 lbs.	\$16.00

The set consists of two upper straps with 4x4 plain leather pads and two lower straps as shown in cut, made of select oak tanned harness leather, extra heavy roller buckles. Heel straps (over all), 22 inches long by 1½ inches wide; calf strap (over all), 22 inches long by 1½ inches wide.

No.	Weight per doz. sets	Price per doz. sets
5301-2.	Same as above, with sheep lined pads...	16 lbs. \$19.00
5301-3.	Same as above, with felt lined pads.....	16 lbs. 19.00

KLEIN SAFETY STRAPS



Fig. 5250

No.	Size	Weight per doz.	Price per doz.
5250.	1½ in. by 6 ft. with Imperial snaps	30 lbs.	\$23.20



Fig. 5251

No.	Size	Weight per doz.	Price per doz.
5251.	1½ in. by 6½ ft. with roller snaps	30 lbs.	\$25.60
5253.	2 in. by 6 ft. with roller snaps	33 lbs.	30.00

KLEIN STEEL LAG SCREW WRENCHES

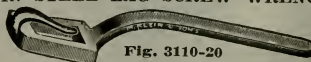


Fig. 3110-20

No.	Size	Weight per doz.	Price per doz.
3110-20.	13½ inch.....	20 lbs.	\$20.00

Forged from select bar steel. The jaw is made tapering, allowing it to take any ordinary size machine bolts, nuts, or lag screws from ¾ inch to 1 inch. The hook is a means of attaching the wrench to the tool belt and it serves to keep the heads of bolts within the jaws of the wrench when in use.

WRENCHES, ETC., SEE INDEX

GENUINE KLEIN ELECTRICAL CONSTRUCTION TOOLS

SPlicing CLAMPS

All Splicing Clamps Packed One in Carton
Polished Heads and Black Handles.

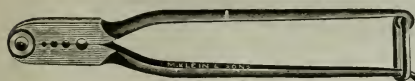


Fig. 102-1

No.	Size	Weight per doz.	Price per doz.
102-1.	7 inch.....	4½ lbs.	\$20.00

Holds Nos. 10, 12, 14 and 16 Copper wire or Nos. 12, 14, 16 and 18 Iron wire.

A handy vest pocket size, just the thing for Telephone Trouble-Men.

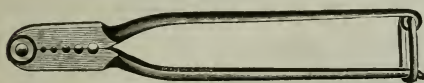


Fig. 102-3

No.	Size	Weight per doz.	Price per doz.
102-3.	10½ inch.....	14½ lbs.	\$27.25

Holds Nos. 6, 8, 10, 12 and 14 Iron wire, or Nos. 4, 6, 8, 10 and 12 Copper wire.

This type is generally used in Telephone Line work and covers the range of bare wires a lineman will meet in this work. The large hole can also be used in serving guy wire.



Fig. 102-2

No.	Size	Weight per doz.	Price per doz.
102-2.	10½ inch.....	14½ lbs.	\$25.50

For Nos. 4, 6, 8 and 14 Iron wire, or Nos. 2, 4, 6 and 12 Copper wire.

This type is used in Electric Light wiring in which the wires run to considerable diameter, the holding dies are oval shape and the wires lay side by side.

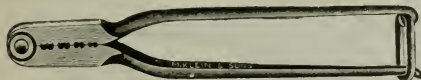


Fig. 105-6

No.	Size	Weight per doz.	Price per doz.
105-6.	10½ inch.....	14 lbs.	\$25.50

For Sleeve Nos. 8, 10, 12 and 14 B. & S. Gauge.

No.	Size	Weight per doz.	Price per doz.
105-7.	10½ inch.....	14 lbs.	\$25.50

Same style as 105-6 only, fitted for Sleeves Nos. 6, 8, 10 and 12 B. & S. Gauge.

The dies in these clamps fit the sleeves snugly so the sleeve is not injured in twisting.

COMBINATION WIRE AND SLEEVE CLAMPS



Fig. 132-2

No.	Size	Weight per doz.	Price per doz.
132-2.	9 inch.....	10½ lbs.	\$28.50

Holds Nos. 8, 10, 12 and 14 Iron wire, or Nos. 6, 8, 10 and 12 Copper wire, Nos. 10, 12 and 14 Sleeves B. & S. Gauge.

As shown the clamp is set for holding sleeves. When the handles are reversed it is converted into a four round hole clamp for holding wire.

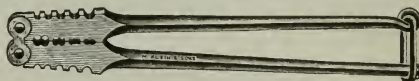


Fig. 132-3

No.	Size	Weight per doz.	Price per doz.
132-3.	10½ inch.....	15½ lbs.	\$29.00

Has five holes for Nos. 6, 8, 10, 12 and 14 Iron wire, Nos. 4, 6, 8, 10 and 12 Copper wire, and 8, 10, 12 and 14 Sleeves, B. & S. Gauge.

132-4.	10½ inch.....	15½ lbs.	\$29.00
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Same as 132-3 only, fitted for Nos. 6, 8, 10 and 12 Sleeves, B. & S. Gauge. Nos. 6, 8, 10, 12 and 14 Iron wire, Nos. 4, 6, 8, 10 and 12 Copper wire.

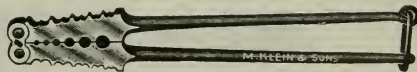


Fig. 132-5

No.	Size	Weight per doz.	Price per doz.
132-5.	11½ inch.....	17½ lbs.	\$32.00

For Nos. 6, 8, 9, 10, 12, 14 and 16 Iron wires, Nos. 4, 6, 8, 9, 10, 11, 12 and 14 Copper wires, Nos. 6, 8, 9, 10, 11, 12 and 14 Copper Sleeves, B. & S. Gauge. Nos. 8, 9, 10, 11, 12, 14 and 16 Iron Sleeves, B. W. G. Gauge.

OBLIQUE CUTTING PLIERS



Fig. 202-5

No.	Size	Weight per doz.	Price per doz.
202-5.	5 inch.....	4 lbs.	\$16.25
202-6.	6 inch.....	4½ lbs.	17.50

For close cutting and in confined places. Cuts through silk insulation. This tool is also used by Shoemen for cutting-out shoe buttons. Packed one in a carton. Have polished heads and black handles.

FOR OTHER STYLES OF PLIERS, NIPPERS, ETC., SEE INDEX

FILES

MILL BASTARD TWO SQUARE EDGES



	Fig. 3831										
Size, inches	4	5	6	7	8	9	10	12	14	15	16
Per doz.	\$3.00	3.20	3.50	3.90	4.30	4.90	5.60	7.50	10.70	13.10	14.70

MILL SECOND CUT TWO SQUARE EDGES



	Fig. 3832										
Size, inches	4	5	6	7	8	9	10	12	14	15	16
Per doz.	\$3.50	3.80	4.00	4.60	4.90	5.80	6.40	8.60	12.20	15.00	16.80

MILL BASTARD ONE ROUND EDGE



	Fig. 3833										
Size, inches	4	5	6	7	8	9	10	12	14	15	16
Per doz.	\$3.40	3.60	3.90	4.40	4.80	5.50	6.30				

MILL BASTARD TWO ROUND EDGES



	Fig. 3833A										
Size, inches	4	5	6	7	8	9	10	12	14	15	16
Per doz.	\$3.80	4.00	4.40	4.90	5.40	6.10	7.00	9.40	13.40	16.40	18.40

FLAT BASTARD



	Fig. 3833B										
Size, inches	4	5	6	7	8	9	10	12	14	15	16
Per doz.	\$3.70	3.90	4.30	4.80	5.30	6.30	7.00	9.70	13.30	16.00	17.80

FLAT SECOND



Fig. 3834										
Size, inches	4	5	6	7	8	10	12	14	15	16
Per doz.	\$4.30	4.60	4.80	5.50	6.10	8.10	11.00	15.30	18.30	20.10

FLAT SMOOTH



Fig. 3835										
Size, inches	4	5	6	7	8	10	12	14	15	16
Per doz.	\$4.70	4.90	5.30	6.10	6.60	8.70	12.10	16.70	20.00	22.30

FILES

HAND BASTARD



Fig. 3861

Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$3.70	3.90	4.30	4.90	5.40	7.50	10.70	15.00	17.90	20.10

HAND SECOND CUT



Fig. 3862

Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$4.30	4.70	5.10	5.80	6.30	8.70	12.30	17.00	20.60	22.80

HAND SMOOTH



Fig. 3863

Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$4.80	5.30	5.60	6.30	6.70	9.40	13.50	18.20	21.70	24.20

ROUND BASTARD



Fig. 3863A

Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$3.00	3.20	3.50	3.90	4.30	5.60	7.50	10.70	13.10	14.70

ROUND SECOND CUT



Fig. 3863B

Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$3.50	3.80	4.00	4.60	4.90	6.40	8.60	12.20	15.00	16.80

ROUND SMOOTH

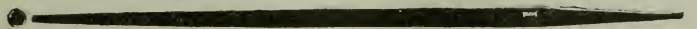


Fig. 3864

Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$3.90	4.10	4.50	4.90	5.40	7.00	9.40	13.10	16.10	17.90

BAND SAW

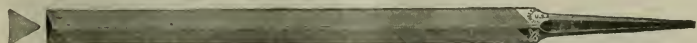
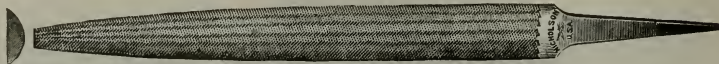


Fig. 3865

Size, inches.....	3	3½	4	4½	5	5½	6	7	8	9	10
Per doz.....	\$2.50	2.50	2.90	3.10	3.50	4.00	4.70	5.60	6.70	8.10	9.70

FILES

HALF ROUND BASTARD



Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$4.80	5.40	6.10	7.00	7.50	9.10	11.80	15.50	18.50	20.60

HALF ROUND SECOND CUT



Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$5.00	6.10	6.70	7.70	8.30	10.10	13.00	17.00	20.40	22.50

HALF ROUND SMOOTH



Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$6.10	6.40	7.10	8.20	8.90	10.70	13.90	18.30	21.70	24.20

SQUARE BASTARD



Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$3.80	4.10	4.60	5.10	5.50	7.40	10.20	13.90	16.90	18.70

SQUARE SECOND CUT



Size, inches.....	4	5	6	7	8	10	12	14	15	16
Per doz.....	\$4.60	4.80	5.10	5.80	6.30	8.50	11.50	16.10	19.20	21.20

TAPER SAW



Size, inches.....	3	3½	4	4½	5	5½	6	7	8	9	10	12
Per doz.....	\$2.10	2.10	2.20	2.40	2.60	3.00	3.40	4.30	5.40	6.60	8.10	12.50

SLIM TAPER SAW



Size, inches.....	3	3½	4	4½	5	5½	6	7	8	9	10	12
Per doz.....	\$2.10	2.10	2.20	2.30	2.50	2.90	3.10	3.80	4.50	5.40	6.40	9.50

DOUBLE ENDED TAPER WITH HANDLE



Size, inches.....	7	8	9	10
Per doz.....	\$3.50	3.90	4.40	4.90

SINGLE STAVE SAW

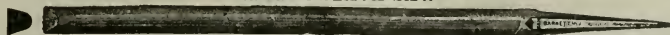


Fig. 3843

PLANER KNIFE



Fig. 3844

FLAT WOOD RASP



Fig. 3844A

HALF RD. WOOD RASP



Fig. 3845

HALF RD. CABINET RASP



Fig. 3846

HORSE RASP ½-FILE

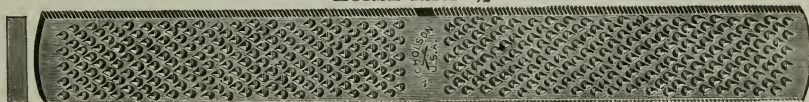


Fig. 3847

HORSE RASP 1/4-FILE



Fig. 3848

FILES FOR PLATINUM



Fig. 3841

Price per dozen in boxes.....	\$2.40
Price per dozen on cards.....	2.80

FILES AND RASPS

As Adopted by the File Manufacturers' Association of the United States, Nov. 1, 1899

LIST PRICES PER DOZEN

Inch	Mill and Round			Flat		
	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth
4	\$3.00	\$3.50	\$3.90	\$3.70	\$4.30	\$4.70
5	3.20	3.80	4.10	3.90	4.60	4.90
6	3.50	4.00	4.50	4.30	4.80	5.30
7	3.90	4.60	4.90	4.80	5.50	6.10
8	4.30	4.90	5.40	5.30	6.10	6.60
9	4.90	5.80	6.30	6.30	7.20	7.90
10	5.60	6.40	7.00	7.00	8.10	8.70
11	6.70	7.80	8.50	8.60	9.80	10.70
12	7.50	8.60	9.40	9.70	11.00	12.10
13	9.40	10.70	11.70	11.80	13.60	14.70
14	10.70	12.20	13.10	13.30	15.30	16.70
15	13.10	15.00	16.10	16.00	18.30	20.00
16	14.70	16.80	17.90	17.80	20.10	22.30
17	18.20	20.20	21.70	21.50	24.20	26.50
18	20.20	22.70	24.30	23.90	26.80	29.20
19	24.60	27.50	29.40	28.40	31.60	34.60
20	27.40	30.70	32.90	31.50	35.30	38.30

Mill Blunt, Dbl. Cut, adv. 2 in.
 Mill Dbl. Cut, adv. 1 in.
 Mill Narrow Point, adv. 1 in.
 Mill Machine, adv. 1 in.
 Mill Triangular & Sq., adv. 1 in.
 Farmers' Own, adv. on Bast.,
 1 in.

Cant (Blunt) Dbl.
 Cut, adv. 2 in.

Inch	Square			Hand and Pillar		
	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth
4	\$3.80	\$4.60	\$4.90	\$3.70	\$4.30	\$4.80
5	4.10	4.80	5.30	3.90	4.70	5.30
6	4.60	5.10	5.50	4.30	5.10	5.60
7	5.10	5.80	6.30	4.90	5.80	6.30
8	5.50	6.30	7.00	5.40	6.30	6.70
9	6.60	7.70	8.30	6.70	7.80	8.30
10	7.40	8.50	9.10	7.50	8.70	9.40
11	9.10	10.40	11.30	9.40	10.90	11.80
12	10.20	11.50	12.80	10.70	12.30	13.50
13	12.50	14.30	15.40	13.30	15.20	16.20
14	13.90	16.10	17.50	15.00	17.00	18.20
15	16.90	19.20	20.90	17.90	20.60	21.70
16	18.70	21.20	23.30	20.10	22.80	24.20
17	22.50	25.40	27.50	24.20	27.10	28.60
18	25.10	28.20	30.40	26.80	29.90	31.50
19	29.70	33.20	35.70	31.90	35.40	37.60
20	32.80	36.70	39.30	35.10	39.20	41.60

Square Blunt, adv. 1 in.

Slotting (Blt.), adv.
 2 in.
 Cotter Blunt or Taper,
 adv. 2 in.
 Reaper, adv. 1 in. on
 2d Cut.

Inch	Mill One Round Edge			Mill Two Round Edges		
	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth
4	\$3.40	\$3.90	\$4.40	\$3.80	\$4.40	\$4.90
5	3.60	4.30	4.60	4.00	4.80	5.10
6	3.90	4.50	5.10	4.40	5.00	5.60
7	4.40	5.20	5.50	4.90	5.80	6.10
8	4.80	5.50	6.10	5.40	6.10	6.80
9	5.50	6.50	7.10	6.10	7.30	7.90
10	6.30	7.20	7.90	7.00	8.00	8.80
11	7.50	8.80	9.60	8.40	9.80	10.60
12	8.40	9.70	10.60	9.40	10.80	11.80
13	10.60	12.00	13.20	11.80	13.40	14.60
14	12.00	13.70	14.70	13.40	15.30	16.40
15	14.70	16.90	18.10	16.40	18.80	20.10
16	16.50	18.90	20.10	18.40	21.00	22.40
17	20.50	22.70	24.40	22.80	25.30	27.10
18	22.70	25.50	27.30	25.30	28.40	30.40

Inch	Tapers		Slintapers		Bandsaw Blunt & Taper	
	Single Cut	Double Cut	Single Cut	Double Cut	Regular	Slint
3	\$2.10	\$2.50	\$2.10	\$2.50	\$2.50	\$2.50
3½	2.10	2.50	2.10	2.50	2.50	2.50
4	2.20	2.90	2.20	2.60	2.90	2.60
4½	2.40	3.10	2.30	3.00	3.10	3.00
5	2.60	3.50	2.50	3.20	3.50	3.20
5½	3.00	4.00	2.90	3.50	4.00	3.50
6	3.40	4.70	3.10	3.90	4.70	3.90
7	4.30	5.60	3.80	4.50	5.60	4.50
8	5.40	6.70	4.50	5.30	6.70	5.30
9	6.60	8.10	5.40	6.30	8.10	6.30
10	8.10	9.70	6.40	7.50	9.70	7.50
11	10.70	12.10	8.30	9.10	12.10	9.10
12	12.50	14.70	9.50	11.00	14.70	11.00
13	15.90	17.50	12.10	13.10	17.50	13.10
14	18.20	20.60	13.80	15.40	20.60	15.40

Sizes below 4 inches, not extended, take 4 inch price.

Half inches not specified, take next higher full inch price.

Dead smooth, double the price of bastard cut. One round edge, advance 12½ per cent.

All lengths above those listed, advance 20 per cent on next lower inch price.

Blunt Files not specified, advance one inch on respective kinds and cuts.

Single or float cut not specified, on regular shapes take double cut prices.

Equalings (bellied), advance two inches on respective kinds and cuts.

Two round edges, advance 25 per cent.

Files varying from standard sizes, subject to special prices.

Cuts not specified, made upon regular blanks, advance one inch on respective kinds and nearest cut.

FILES AND RASPS

As Adopted by the File Manufacturers' Association of the United States, Nov. 1, 1899

List Prices per Dozen

Inch	Half Round and 3 Square			Warding		
	Bastard	2d Cut	Smooth	Bastard	2d Cut	Smooth
4	\$4.80	\$5.60	\$6.10	\$4.00	\$4.80	\$5.40
5	5.40	6.10	6.40	4.50	5.30	5.80
6	6.10	6.70	7.10	4.90	5.90	6.40
7	7.00	7.70	8.20	5.90	6.90	7.50
8	7.50	8.30	8.90	6.40	7.50	8.20
9	8.50	9.40	9.90	7.80	9.00	9.90
10	9.10	10.10	10.70	8.70	10.10	11.00
11	10.70	11.80	12.70	10.90	12.70	13.70
12	11.80	13.00	13.90	12.30	14.30	15.40
13	14.10	15.40	16.60	15.20	17.40	18.70
14	15.50	17.00	18.30	17.00	19.40	21.00
15	18.50	20.40	21.70			
16	20.60	22.50	24.20			
17	24.70	27.00	28.90			
18	27.50	29.90	32.00			
19	32.80	35.70	38.10			
20	36.20	39.40	42.30			

Ginsaw, take Bastard price.
 Crossing, adv. 2 in.
 Tumbler, adv. 2 in.
 Feather Edge (Blunt), adv. 2 in.
 High Back, adv. 2 in.
 Half Round, adv. 2 in.

STAVESAW
 8 inch.....\$9.40

Stavesaw Improved
 6 inch.....\$6.40
 7 inch..... 7.40
 8 inch..... 8.10
 9 inch..... 9.70
 10 inch.....10.70
 12 inch.....15.40

Inch	Wood Files			Wood Rasps		
	Flat	Half Round	Cabinet	Flat	Half Round	Cabinet
6	\$4.30	\$6.10	\$8.10	\$7.40	\$8.10	\$10.10
7	4.80	7.00	9.30	8.60	9.30	11.70
8	5.30	7.50	10.10	9.40	10.10	12.80
9	6.30	8.50	12.20	11.40	12.20	15.50
10	7.00	9.10	13.70	12.80	13.70	17.50
11	8.60	10.70	16.80	15.50	16.80	20.70
12	9.70	11.80	18.70	17.50	18.70	22.80
13	11.80	14.10	22.40	20.90	22.40	26.80
14	13.30	15.50	24.80	23.20	24.80	29.60
15	16.00	18.50	29.70	27.80	29.70	33.90
16	17.80	20.60	32.90	30.80	32.90	36.90
17	21.50	24.70	38.90	36.20	38.90	42.40
18	23.90	27.50	43.60	40.90	43.60	46.90

Inch	Shoe Rasps			Inch	Knife		
	Flat	Half Round	Oval		Bastard	2d Cut	Smooth
6	\$8.10	\$8.10	\$9.30	4	\$5.40	\$6.10	\$6.40
7	9.30	9.30	10.10	5	6.10	6.70	7.10
8	10.10	10.10	12.20	6	6.90	7.50	7.90
9	12.20	12.20	13.70	7	7.80	8.50	8.90
10	13.70	13.70	16.80	8	8.50	9.10	9.50
11	16.80	16.80	18.70	9	9.40	10.60	11.30
12	18.70	18.70	22.40	10	10.10	11.50	12.30
13	22.40	22.40	....	11	12.20	13.70	14.60
14	24.80	24.80	....	12	13.70	15.20	16.10
LAST MAKERS' RASPS				13	16.30	17.90	19.20
1 in. adv. on Cabinet Rasp				14	18.20	19.90	21.20

Inch	Horse Rasps		File Rasps		
	Plain	Beveled & $\frac{1}{4}$ Rs	Tanged	Flat	Half Round
6	....	....	....	\$7.40	\$8.10
7	....	....	....	8.60	9.30
8	....	....	....	9.40	10.10
9	....	....	....	11.40	12.20
10	\$9.40	\$10.70	\$12.80	12.80	13.70
11	11.40	12.90	15.20	15.50	16.80
12	12.80	14.40	16.80	17.50	18.70
13	15.20	17.00	19.60	20.90	22.40
14	17.80	20.10	23.10	23.20	24.80
15	20.90	23.60	27.30	27.80	29.70
16	24.40	27.50	32.20	30.80	32.90
17	28.90	31.50	....	36.20	38.90
18	32.90	36.20	....	40.90	43.60

Sizes below 4 inches, not extended, take 4 inch price.

Half inches not specified, take next higher full inch price.

Dead smooth, double the price of bastard cut.

One round edge, advance 12 $\frac{1}{2}$ per cent.

All lengths above those listed, advance 20 per cent on next lower inch price.

Blunt files not specified, advance one inch on respective kinds and cuts.

Single or float cut not specified, on regular shapes take double cut price.

Equalings (bellied), advance two inches on respective kinds and cuts.

Two round edges, advance 25 per cent.

Files varying from standard sizes, subject to special prices.

Cuts not specified, made upon regular blanks, advance one inch on respective kinds and nearest cut.

Inch	Pit Saw	Cant Saw	Cross Cut	Hook Tooth	Planer Knife	In- serted Tooth or Chisel Tooth
	Single Cut	Single Cut	Single Cut	Single Cut	Single Cut	
4	\$4.80	\$4.30	\$4.80	....	....	....
5	5.40	4.70	5.40	....	....	....
6	6.10	5.40	6.10	\$6.70	....	....
7	7.00	6.10	7.00	7.70	....	....
8	7.50	6.40	7.50	8.30	\$6.40	\$8.30
9	8.50	7.80	8.50	9.40	....	9.40
10	9.10	8.70	9.10	10.10	8.60	10.10
11	10.70	10.40	10.70	11.80	....	....
12	11.80	11.40	11.80	13.00	12.10	....

Climax, adv. 2 in. on Half Round Bastard
 Round Gulleting, take Pit Saw price

PATENT DOUBLE-ENDER WITH HANDLE

7	8	9	10
3.50	3.90	4.40	4.90

SAND, FLINT AND GARNET PAPER—SAND CLOTH EXTRA QUALITY FLINT PAPER



In Sheets 9x11 Inches

480 Sheets to Ream. Smallest Package ½ Ream

Nos.	Per Ream	Nos.	Per Ream
000 to ½	\$7.00	3	\$10.50
1	7.50	3½	11.75
1½	8.00	4	12.75
2	8.50	Assorted	8.00
2½	9.00		

FLINT FINISHING PAPER

9x11 inches, single faced, 480 sheets. Per ream	\$6.50
9x11 inches, double faced, 240 sheets. Per ream	6.50
11 inches by 60 yards, double faced only. Per roll	6.50

STAR SAND PAPER

In Sheets 8¾x10½ Inches

480 Sheets to Ream. Smallest Package ½ Ream

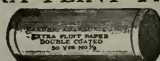
Nos.	Per Ream	Nos.	Per Ream
000 to ½	\$6.00	2½	\$7.75
1	6.25	3	9.00
1½	6.75	Assorted	6.75
2	7.25		

SAND CLOTH

Per Roll of 50 Yards

Width Inches	No. 0 to 1-2	No. 1	No. 1-2	No. 2	No. 2-2	No. 3	No. 3-2
2¾	\$3.05	\$3.30	\$3.40	\$3.50	\$3.75	\$4.00	\$4.20
3¾	4.00	4.35	4.55	4.65	5.05	5.30	5.60
4	4.60	5.05	5.20	5.40	5.80	6.25	6.45
5	6.25	6.70	6.95	7.25	7.80	8.25	8.75
6	6.70	7.30	7.60	7.90	8.50	9.05	9.60
7	7.90	8.60	9.00	9.35	10.00	10.65	11.20
8	8.85	9.60	10.00	10.45	11.15	11.95	12.45
9	10.00	10.90	11.40	11.85	12.70	13.60	14.40
10	11.20	12.10	12.60	13.05	14.00	14.80	15.95
12	13.45	14.60	15.20	15.80	17.00	18.10	18.55
14	14.40	15.60	16.50	17.40	18.60	19.75	21.00
16	17.75	19.20	20.00	20.85	22.30	23.85	24.60
18	20.15	21.80	22.80	23.75	25.45	27.25	28.50
20	22.40	24.25	25.20	26.15	28.05	29.65	31.50
24	26.20	28.35	29.75	31.20	33.40	35.50	36.70
28	28.80	31.20	33.00	34.80	37.20	39.50	42.00

EXTRA FLINT PAPER



Extra Coated
In Rolls. Per Roll of 50 Yards

Width Inches	No. 00 to 1-2	No. 1	No. 1-2	No. 2	No. 2-2	No. 3	No. 3-2
2¾	\$1.35	\$1.40	\$1.45	\$1.50	\$1.55	\$1.75	\$1.85
3¾	1.55	1.65	1.75	1.80	1.90	2.10	2.25
4	1.75	1.85	1.90	2.05	2.15	2.40	2.60
6	2.45	2.60	2.75	3.00	3.20	3.50	3.80
8	3.10	3.30	3.60	3.80	3.95	4.45	4.90
9	3.80	3.90	4.10	4.20	4.40	4.80	5.30
10	3.95	4.20	4.40	4.55	4.90	5.30	6.00
12	4.50	4.85	5.15	5.45	5.80	6.50	7.20
15	5.80	6.10	6.50	6.80	7.15	7.80	8.80
18	7.15	7.45	7.80	8.15	8.45	9.10	10.20
20	7.60	8.10	8.60	9.20	9.80	10.75	11.90
24	8.00	8.75	9.25	10.25	11.00	12.25	13.50
30	10.75	11.50	12.00	12.50	13.25	14.50	16.75
36	13.25	13.75	14.50	15.00	16.00	17.00	19.75
40	16.00	16.50	17.00	17.75	18.50	20.00	22.75
42	17.00	17.75	18.25	19.00	19.75	21.50	24.00
48	19.75	21.50	22.25	23.00	24.00	26.50	30.50

GARNET PAPER



In Sheets 9x11 Inches

480 Sheets to Ream. Smallest Package ½ Ream.

Nos.	Per Ream	Nos.	Per Ream
000 to ½	\$7.00	2	\$9.00
1	7.50	2½	10.00
1½	8.25	3	11.00

In Extra Coated 50 Yard Rolls. Per Roll

Width Inches	No. 00 to 1-2	No. 1	No. 1-2	No. 2	No. 2-2	No. 3
2¾	\$1.25	\$1.30	\$1.35	\$1.45	\$1.60	\$1.65
3¾	1.40	1.50	1.55	1.60	1.75	2.00
4	1.60	1.70	1.75	1.90	2.10	2.30
5	1.75	1.85	1.90	2.05	2.35	2.55
6	2.25	2.35	2.45	2.60	2.95	3.25
8	2.95	3.10	3.25	3.50	3.90	4.30
9	3.40	3.65	3.80	4.00	4.45	4.65
10	3.75	4.00	4.15	4.45	4.95	5.30
12	4.35	4.60	4.70	5.15	5.85	6.30
15	5.55	6.00	6.30	6.75	7.40	7.95
18	6.60	7.15	7.40	7.85	8.60	9.10
20	7.80	8.35	8.65	9.10	10.00	10.50
24	8.00	8.50	8.75	9.50	11.00	12.00
30	10.75	11.25	11.75	12.50	13.50	15.00
36	13.00	13.75	14.25	14.75	16.00	17.50
40	15.50	16.00	16.75	17.50	18.50	20.00
42	16.75	17.25	18.00	18.75	19.75	21.00
48	19.00	20.00	21.00	22.00	23.00	26.00

Width of Rolls not shown above are charged at the prices of the next greater width

EMERY, GARNET AND CROCUS CLOTH



GARNET CLOTH

Per Roll of 50 Yards

Width in.	000 to ½	1	1½	2	2½	3
2 ¾	\$2.90	\$3.10	\$3.20	\$3.25	\$3.35	\$3.45
3 ¾	3.80	4.00	4.10	4.25	4.40	4.55
4	4.20	4.55	4.70	4.90	5.00	5.15
5	5.80	6.25	6.50	6.70	6.90	7.15
6	6.45	7.25	7.70	7.95	8.30	8.55
7	7.25	7.80	8.05	8.30	8.60	8.85
8	8.40	9.00	9.35	9.60	9.95	10.25
9	9.35	10.00	10.35	10.75	11.00	11.50
10	11.60	12.50	13.00	13.40	13.80	14.30
12	12.75	13.65	14.20	14.55	15.10	15.50
14	14.00	15.00	15.50	16.00	16.50	17.00
16	16.80	18.00	18.70	19.20	19.90	20.50
18	18.20	19.55	20.20	20.90	21.50	22.15
20	20.00	21.00	21.50	22.00	22.50	23.00
22	25.20	27.00	28.05	28.80	29.85	30.75
28	28.00	30.00	31.00	32.00	33.00	34.00



GARNET COMBINATION

Extra Heavy. Garnet Paper-Cloth
Per Roll of 50 Yards

Width in.	000 to ½	1	1½	2	2½	3
2 ¾	\$2.30	\$2.45	\$2.55	\$2.60	\$2.70	\$2.80
3 ¾	3.00	3.15	3.20	3.30	3.40	3.60
4	3.50	3.65	3.75	3.90	4.00	4.10
5	4.65	5.00	5.20	5.35	5.55	5.75
6	5.00	5.50	5.60	5.75	5.95	6.10
7	5.80	6.25	6.45	6.65	6.90	7.10
8	6.70	7.20	7.40	7.70	7.90	8.10
9	7.50	8.00	8.30	8.60	8.80	9.20
10	9.30	10.00	10.40	10.75	11.00	11.45
12	10.00	10.80	11.15	11.50	11.90	12.00
14	11.70	12.55	12.90	13.30	13.90	14.20
16	13.30	13.95	14.70	15.15	15.60	16.10
18	14.90	16.00	16.45	17.00	17.50	18.00
20	16.50	17.70	18.00	18.90	19.50	20.00
24	19.20	20.60	21.25	21.95	22.65	23.35
28	22.40	24.00	24.80	25.60	26.40	27.20

Width of Rolls not shown above are charged at the prices of the next greater width.

GARNET FINISHING PAPER

Single faced (6/0 to 1), per ream, 9x11 inches, 480 sheets	\$7.50
Double faced (5/0 to 1), per ream, 9x11 inches, 240 sheets	7.50
Double faced (5/0 to 1), per roll, 11 inches x 60 yards	7.50

EMERY PAPER



Fig. 5

In Sheets 9x11 inches

480 Sheets to Ream. Smallest Package ½

Nos.	Per Ream	Nos.	Per Ream
00 to ½	\$12.50	2½	\$18.50
1	13.75	3	22.75
1½	15.00	3½	26.50
2	16.75	Assorted	15.00

In Extra Coated 50 Yard Rolls. Per Roll

Width in.	00 to ½	1	1½	2	2½	3	3½
2	\$1.50	\$1.70	\$1.80	\$1.90	\$2.15	\$2.55	\$2.90
3	2.00	2.25	2.40	2.60	2.90	3.50	3.90
3½	2.35	2.55	2.80	2.95	3.40	4.00	5.00
4	2.60	2.90	3.10	3.35	3.75	4.50	5.00
6	3.70	4.20	4.40	4.75	5.40	6.70	7.40
8	4.95	5.45	5.80	6.30	7.10	8.65	9.80
9	5.45	6.20	6.45	7.00	7.95	9.70	10.95
10	6.00	6.70	7.10	7.70	8.70	10.65	12.15
12	7.00	7.95	8.40	9.10	10.30	12.70	14.40
15	8.95	10.10	10.70	11.55	13.15	16.10	18.20
16	9.55	10.70	11.35	12.25	13.95	17.10	21.60
18	10.60	11.95	12.65	13.65	15.55	19.10	21.65
20	11.70	13.15	13.95	15.05	17.10	21.10	23.95
24	12.75	14.75	15.75	17.00	19.50	24.00	27.50

EXTRA QUALITY EMERY CLOTH

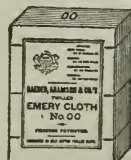


Fig. 6

In Sheets 9x11 inches

480 Sheets to Ream, in Quires. Smallest Package ¼ Ream.

Nos.	Per Ream	Nos.	Per Ream
00 to ½	\$31.00	2½	\$41.00
1	33.00	3	44.00
1½	35.00	3½	47.00
2	38.00	Assorted	35.00

In Extra Coated 50 Yard Rolls. Per Roll

Width in.	00 to ½	1	1½	2	2½	3	3½
1 ¾	\$1.10	\$1.15	\$1.20	\$1.25	\$1.30	\$1.35	\$1.40
1 ½	1.50	1.55	1.60	1.65	1.70	1.80	1.90
1 ¼	1.70	1.80	1.90	2.00	2.10	2.20	2.35
2	2.30	2.45	2.55	2.70	2.90	3.10	3.25
2 ½	2.90	3.05	3.25	3.45	3.70	3.95	4.15
3	3.55	3.70	3.95	4.20	4.50	4.80	5.10
3 ½	4.10	4.35	4.60	4.95	5.30	5.65	6.00
4	4.85	5.00	5.30	5.70	6.10	6.50	6.90
5	5.30	5.65	6.00	6.40	6.90	7.40	7.85
6	6.50	6.90	7.45	7.90	8.50	9.10	9.65
7	7.70	8.20	8.75	9.35	10.10	10.80	11.50
8	8.90	9.50	10.10	10.85	11.70	12.55	13.35
9	10.10	10.75	11.50	12.35	13.30	14.25	15.15
10	11.50	12.00	13.00	14.00	15.00	16.00	17.00
12	12.50	13.30	14.20	15.30	16.50	17.70	18.85
14	14.90	15.85	16.95	18.15	19.70	21.15	22.50
16	16.30	17.40	18.70	20.25	22.00	24.60	26.15
18	19.75	20.90	21.90	24.20	26.10	28.00	29.85
20	22.25	23.50	25.25	27.25	29.25	31.50	33.50
22	24.50	26.10	27.90	30.10	32.50	34.90	37.15
24	29.30	31.20	33.40	35.80	38.90	41.80	44.60
27	32.50	34.50	37.00	40.00	43.00	46.50	49.50

WIDTH OF ROLLS NOT SHOWN ABOVE ARE CHARGED AT THE PRICES OF THE NEXT GREATER WIDTH.

CARBORUNDUM PRODUCTS

ALOXITE CLOTH

Aloxite is the ideal abrasive material for cutting steel, and when coated on cloth it is far superior to emery for general machine shop work. It is exceedingly hard and extremely tough, and it not only does better and faster work than emery, but the Aloxite cloth, because of the toughness of the grain, shows much longer life.

PRICE LIST ALOXITE CLOTH



Fig. 940A

Grit Numbers	Sheets 9x11	50 yard Rolls—Price per Roll		
	Price per Ream	Width 9 inches	Width 18 inches	Width 27 inches
Powder FF	\$31.00	\$11.50	\$22.25	\$32.50
Powder F	31.00	11.50	22.25	32.50
3/0-180	31.00	11.50	22.25	32.50
2/0-150	31.00	11.50	22.25	32.50
0-120	31.00	11.50	22.25	32.50
100-100	31.00	11.50	22.25	32.50
½-90	31.00	11.50	22.25	32.50
1-80	33.00	12.00	23.50	34.50
1½-70	35.00	13.00	25.25	37.00
2-60	38.00	14.00	27.25	40.00
2½-50	41.00	15.00	29.25	43.00
3-36	44.00	16.00	31.50	46.50
3½-24	47.00	17.00	33.50	49.50

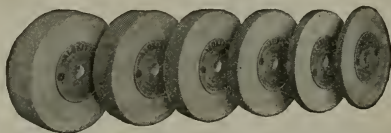
ALOXITE CLOTH IN ECONOMY STRIPS



Some mechanics prefer Aloxite cloth in strips and to satisfy the demand, this material is made up in packages containing 15 strips 11 inches long and 1 1/4 inches wide either of one or assorted grits.

No. 66. Aloxite Cloth Strips (packages).....Price per gross \$21.60

ALOXITE CLOTH IN ECONOMY ROLLS



Aloxite cloth which is rapidly succeeding the old time emery cloth for general machine shop work is put up in economy rolls as well as in reams, sheets, and rolls. The cloth is cut in 1/2, 3/4, 1, 1 1/2, 2 and 2 1/2 inch widths, snugly wound on wood spools. The machine-shop operator simply cuts off a piece in any length of the width he desires. Loss of time and the destruction of good cloth by tearing strips from the regular sheets is eliminated. The rolls are 50 yards long and are made in any desired grit.

PRICE LIST

Width		Grits						
		FF to ½	1	1½	2	2½	3	3½
½	inch.....	\$1.10	\$1.15	\$1.20	\$1.25	\$1.30	\$1.35	\$1.40
¾	inch.....	1.50	1.55	1.60	1.65	1.70	1.80	1.90
1	inch.....	1.70	1.80	1.90	2.00	2.10	2.20	2.35
1 ½	inch.....	2.30	2.45	2.55	2.70	2.90	3.10	3.25
2	inch.....	2.90	3.05	3.25	3.45	3.70	3.95	4.15
2 ½	inch.....	3.55	3.70	3.95	4.20	4.50	4.80	5.10

CARBORUNDUM WHEELS—POWDER—STONES

GRITS AND GRADES OF CARBORUNDUM AND ALOXITE WHEELS FOR VARIOUS CLASSES OF GRINDING

In submitting the following table of grits and grades of wheels for different kinds of grinding it must be distinctly understood that the information is general. Conditions under which wheels are used vary so greatly that we do not wish our present and prospective customers to accept the grading as our best recommendation for their work. If a customer orders a wheel from this table and finds that it is not accomplishing the work as he desires, we request that he write to us stating in what manner the wheel fails.

Work	Grit Numbers	Grade Letters
Brass	24 to 36	I to J
Cast iron	20 to 30	G x to H x
Knives	60 to 80	M
Shears	100 to 120	K to M
Tools (large)	30 to 40	I to J
Tools (small)	50 to 70	J to K
General use	30 to 40	H to J

PRICE LIST OF CARBORUNDUM AND ALOXITE WHEELS

Diameter in inches	Thickness of Wheels in Inches								Diameter in inches	Revolutions per minute for surface speed of 5000 ft.
	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2		
1	\$0.40	\$0.50	\$0.60	\$0.70	\$0.80	\$0.95	\$1.05	\$1.15	1	19,099
2	.60	.75	.90	1.00	1.15	1.30	1.45	1.60	2	9,549
3	.80	1.00	1.20	1.45	1.65	1.85	2.10	2.30	3	6,366
4	1.10	1.40	1.65	1.95	2.25	2.55	2.80	3.10	4	4,775
5	1.50	1.90	2.25	2.65	3.00	3.40	3.80	4.15	5	3,820
6	1.90	2.40	2.90	3.40	3.90	4.45	4.95	5.40	6	3,183
7	2.30	2.95	3.60	4.30	4.95	5.60	6.30	6.90	7	2,728
8	2.70	3.55	4.40	5.20	6.10	6.90	7.80	8.60	8	2,387
9	3.10	4.15	5.20	6.30	7.40	8.40	9.50	10.60	9	2,122
10	3.60	4.90	6.20	7.50	8.90	10.20	11.50	12.80	10	1,810
12	4.20	6.00	7.80	9.50	11.30	13.10	14.90	16.70	12	1,592

CARBORUNDUM AND ALOXITE GRAINS AND POWDERS

Carborundum and Aloxite grains are produced by crushing and grinding the crude crystals, washing and separating by sieves into various sizes. These are numbered, the same as emery, in accordance with the number of threads per lineal inch of the sieve through which they have passed as follows: 6, 8, 10, 12, 14, 16, 20, 24, 30, 36, 40, 50, 60, 70, 80, 90, 100, 120, 150, 180, 220.

Powders are the grains too fine to size by ordinary sieving. These are graded by floating in water. F, FF, FFF powders include in their numbers all grades of fineness from F, the next finest after No. 220, to FFF, which contains the very finest dust.



PRICE LIST

Crude Carborundum Crystal (Selected)

Any quantity, carefully packed..... per lb. \$0.50

Carborundum and Aloxite Grains in Grits Packed for Shipment as follows:

Grains in 5 lb. tin cans..... per lb. \$0.20
 Grains in 1 lb. tin cans..... " .25
 Grains in 1/2 lb. tin cans..... " .30
 Emery Powder..... " .20

CARBORUNDUM COMBINATION STONES



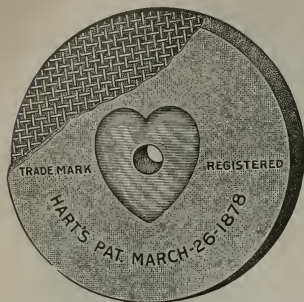
Made in Five Sizes

These stones are designed especially for car-penters and mechanics.

They are made with one face of coarse and one face of very fine grit. The coarse side can be used for sharpening very dull tools; the fine side for giving required keen, lasting edge.

No. 108.	8x2	x1	inches.....	per doz. \$18.00
No. 109.	6x2	x1	inches.....	" 12.00
No. 110.	7x2	x1	inches.....	" 15.00
No. 111.	5x2	x 3/4	inches.....	" 9.00
No. 112.	4x1 1/4	x 3/8	inches.....	" 7.20
No. 328.	8x3	x1	inches.....	" 21.00
No. 329.	9x3	x1 1/2	inches.....	" 30.00
No. 333.	12x2 1/2	x1	inches.....	" 24.00

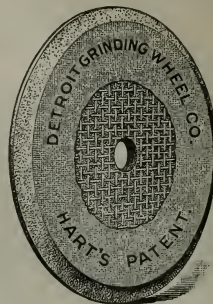
These stones are nested in shipping packages containing 1/4 and 1/2 dozen stones in cartons.
 Furnished in Aloxite in same sizes and prices.



EMERY WHEELS

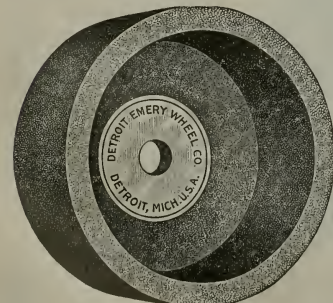
PRICE LIST

ADOPTED JULY 1, 1915.



Dia. ins.	Thickness of Wheels in inches													
	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2
1	\$0.40	\$0.50	\$0.60	\$0.70	\$0.80	\$0.95	\$1.05	\$1.15	\$1.25	\$1.35	\$1.45	\$1.55	\$1.70	\$1.80
2	.60	.75	.90	1.00	1.15	1.30	1.45	1.60	1.75	1.85	2.00	2.15	2.30	2.40
3	.80	1.00	1.20	1.45	1.65	1.85	2.10	2.30	2.50	2.70	2.95	3.15	3.35	3.55
4	1.10	1.40	1.65	1.95	2.25	2.55	2.80	3.10	3.40	3.70	4.00	4.25	4.55	4.80
5	1.50	1.90	2.25	2.65	3.00	3.40	3.80	4.15	4.55	4.90	5.30	5.70	6.05	6.40
6	1.90	2.40	2.90	3.40	3.90	4.45	4.95	5.40	5.95	6.50	7.00	7.50	8.00	8.50
7	2.30	2.95	3.60	4.30	4.95	5.60	6.30	6.90	7.55	8.20	8.90	9.60	10.25	10.90
8	2.70	3.55	4.40	5.20	6.10	6.90	7.80	8.60	9.45	10.30	11.15	12.00	12.85	13.70
9	3.10	4.15	5.20	6.30	7.40	8.40	9.50	10.60	11.65	12.70	13.75	14.80	15.90	17.00
10	3.60	4.90	6.20	7.50	8.90	10.20	11.50	12.80	14.10	15.40	16.70	18.00	19.35	20.70
12	4.20	6.00	7.80	9.50	11.30	13.10	14.90	16.70	18.45	20.20	22.00	23.80	25.55	27.30
14	4.90	7.20	9.60	11.90	14.20	16.50	18.90	21.20	23.50	25.80	28.15	30.50	32.80	35.10
16	5.70	8.70	11.60	14.60	17.60	20.50	23.50	26.50	29.45	32.40	35.35	38.30	41.30	44.30
18	6.60	10.30	14.00	17.70	21.40	25.10	28.80	32.50	36.15	39.80	43.50	47.20	50.90	54.60
20	.....	12.30	16.80	21.40	25.90	30.50	35.00	39.60	44.15	48.70	53.35	58.00	62.50	67.00
22	.....	.....	20.10	25.60	31.10	36.70	42.20	47.70	53.35	59.00	64.50	70.00	75.50	81.00
24	.....	.....	24.00	30.60	37.30	44.00	51.00	59.00	65.00	71.00	78.00	85.00	92.00	99.00
26	.....	.....	.....	36.40	44.50	52.50	61.00	69.00	77.00	85.00	93.00	101.00	109.00	117.00
28	.....	.....	.....	46.00	55.00	65.00	74.00	83.00	92.00	102.00	111.00	120.00	129.00	.....
30	.....	.....	.....	58.00	68.00	79.00	89.00	100.00	111.00	122.00	132.00	143.00	153.00	.....
32	.....	.....	.....	.....	72.00	84.00	96.00	109.00	123.00	136.00	150.00	163.00	177.00	191.00
34	.....	.....	.....	.....	82.00	95.00	109.00	123.00	136.00	150.00	163.00	177.00	191.00	.....
36	.....	.....	.....	.....	94.00	109.00	124.00	139.00	154.00	169.00	183.00	198.00	213.00	.....

IMPORTANT—In ordering, always state the kind of work you wish to do, what shape face you want on the wheels, the size of mandrel hole, and the speed they are to run. Special wheels for running in water made to order.



EMERY CYLINDERS AND CUP WHEELS

Diameter inches	Thickness of Rim					
	1	1 1/2	2	2 1/2	3	3 1/2
8	\$15.50	.....	.....	.....	.....	.....
9	16.50	\$22.00	.....	.....	.....	.....
10	17.75	24.25	\$29.50	.....	.....	.....
12	18.75	26.25	33.00	\$38.75	\$44.00	.....
14	22.50	31.00	38.50	45.50	51.50	\$57.50
16	26.00	35.75	44.60	53.00	60.25	67.60
18	28.80	40.25	51.40	61.40	71.00	79.00
20	30.90	44.00	56.25	67.40	78.50	87.60
22	35.00	49.75	65.00	79.40	91.50	103.90
24	37.50	54.25	70.50	86.25	99.50	113.60
26	39.75	59.80	....	93.00	109.25	124.75

Above list is figured on a basis of Cylinders 7 inches long. Other lengths at proportionate rates. To obtain price of Cup Wheels, add to the price of Cylinder of same dimensions the price of a regular wheel whose diameter is the inside diameter of the Cylinder, the thickness whatever is required for the back of Cup Wheel.

FOR GRINDERS, ARBORS, ETC., SEE INDEX



Fig. 4M

TOOL GRINDERS

MECHANICS' SPECIAL LINE

Built for long life and hard usage. The cases are one-piece, which insures perfect alignment. The handle, drive gears and wheel are fastened by tapered bearings. Each machine is equipped with adjustable tool rests, for right or left hand use, and is finished in black, baked enamel. The gears are overhanging, the drive gear being dished so as to bring the weight over the bearing in place of at the end of the shaft. The gears are cut spiral, which makes them run quieter, smoother and last longer. Each machine is well packed in an individual carton. Each machine is equipped with a Carborundum grinding wheel

No. 4M.	Fitted with Tool Rest and Carborundum Wheel, 4x1 inch in size. Weight, boxed, 7 lbs. Price.....	\$4.50
No. 5M.	Fitted with Tool Rest and Carborundum Wheel, 5x1 inch in size. Weight, boxed, 9 lbs. Price.....	6.50
No. 6M.	Fitted with adjustable Tool Rest and Chisel Guide. Carborundum Wheel, 6x1 inch in size. Weight, boxed, 13 lbs. Price.....	9.00
No. 7M.	Fitted with adjustable Tool Rest and Patented Chisel and Plane Bit Guide, with Carborundum Wheel, 7x1 1/4 inch in size. Weight, boxed, 24 lbs. Price...	13.50

CHALLENGE LINE

Low priced, but efficient. Finished in black baked enamel; equipped with Adjustable Tool Rest

No. 4C.	4x1 Carborundum Wheel; weight, boxed, 6 lbs. Price.....	\$3.50
No. 95.	5x1 Carborundum Wheel; weight, boxed, 8 lbs. Price.....	5.50
No. 96.	6x1 Carborundum Wheel; weight, boxed, 10 lbs. Price.....	7.50

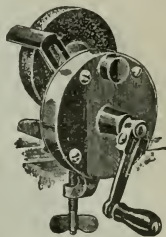


Fig. 4C

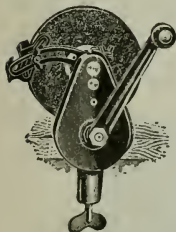


Fig. 104C

MULTIGEAR No. 104C

Built for high speed and very rapid grinding. Gears interchangeable, and made for hard wear and long life. Case oil tight. Finished in black, baked enamel. Each turn of the handle makes 30 turns of grinding wheel. Fitted with adjustable Tool Rest, and Wheel 4x1 inches in size. Weight, boxed, 8 lbs. Price.....

\$7.50

BEST MADE No. 51

Worm Gear, Ball Bearings, runs in oil. Chambered Case, which allows oil to automatically lubricate every bearing. Wide bearings, which insure ample oil retaining surfaces. Adjustable Tool Rest, case finished in black, baked enamel. Exceptionally well built, easy running machine. Equipped with double grit Grinding Wheel, having extra fine face, and medium body. Grinder can be swiveled to any position.

Equipped with 5x1 1/2 inch Carborundum Double Grit Wheel. Weight, boxed, 12 lbs. Price.....

\$9.00

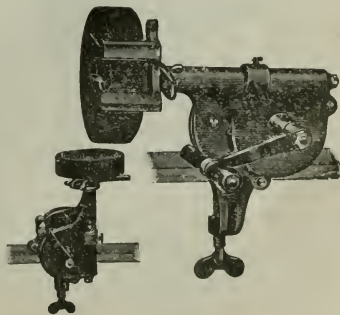


Fig. 51

FOR EMERY WHEELS, SEE INDEX

TOOL GRINDERS

HUMMER No. 271C

All Metal Frame, Shaft Drive, gravity lubrication, Grinding Head capable of being swiveled to any angle, Beveled Gears, strongly braced, Bicycle Tread, many special attachments, finished in red and black baked enamel. This is by all means one of the very best foot power grinders imaginable. It operates as easy as a bicycle and cuts many times faster than emery, without drawing temper. It does not matter how difficult a tool may be to grind, the head of the machine can be swiveled so as to make it convenient to grind even the most difficult tool. The two combination tool rests are universally adjustable, so that practically any angle or shape can be given to any tool. Height of machine over all, 42 inches. Each machine is equipped with one medium Carborundum Wheel, one coarse Carborundum Wheel, one Universal Tool Rest, and one Chisel and Plane Bit Guide. 6x1 3/8 inch Wheels. Weight, boxed, 65 lbs. Price.....\$20.00



Hammer. Fig. 271C

POWER BENCH GRINDERS

Built very strong and heavy and suitable for all kinds of shop and heavy grinding. Power Bench Grinders Nos. 310C and 309C are equipped with 2 1/4 x 2 1/4 inch Pulleys, Spring Oil Cups, adjustable Tool Rests, and 7x1 1/4 inch Carborundum Wheels. The bearings on these machines are steel on gray iron. Those on No. 310C are adjustable, while those on No. 309C are solid. The wheels on these machines are fastened by collars and burrs.

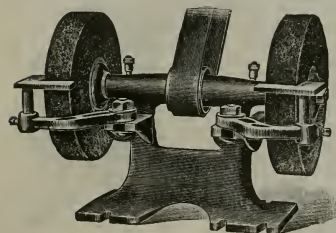


Fig. 309C

No. 309C is equipped with one medium and one coarse 7x1 1/4 inch Carborundum Wheels, one Pulley, solid bearings. Weight, boxed, 32 lbs. Price.....\$15.00

No. 310C is equipped with one medium and one coarse 7x1 1/4 inch Carborundum Wheels. Tight and loose Pulleys, adjustable bearings. Weight, boxed, 35 lbs. Price. 18.50

No. 306C. A lighter Power Bench Grinder, built for long life, equipped with adjustable Tool Rests, 6x1 inch Carborundum Wheels (one medium and one fine), held by steel collars and burrs. Power can come from above, at the side or underneath. One pulley only, 1 3/4 inch diameter by 2 1/2 inch face. Weight, boxed, 14 lbs. Price.....\$10.00

No. 305C. is a very practical Power Bench Grinder, which can be clamped to almost any beam, bench or other support, and run by a 2 inch pulley. Equipped with one medium Carborundum Wheel, 5x1 3/8 inches in size. Weight, boxed, 15 lbs. Price..... 6.00

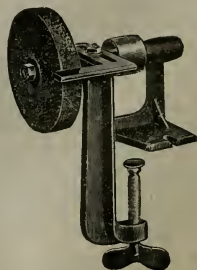


Fig. 305C

FOR EMERY WHEELS, SEE INDEX

GRINDSTONES

NOT MOUNTED

30 lbs. and under.....	List per ton \$50.00
30 to 200 lbs.....	" 52.00
200 lbs. and over.....	" 60.00

All stones over 200 pounds are sold by measurement weight, less than 200 pounds by cut weight, which is actual weight on scales as they come from the lathe. This weight is always cut on the stone.

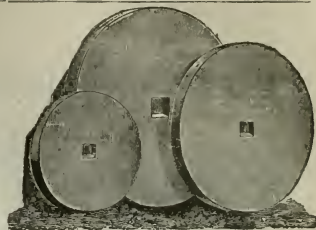


Fig. 399A

HAND GRINDSTONES

Japaned Black

6 in.....	each \$0.70
7 in.....	" .80
8 in.....	" .90
9 in.....	" 1.00
10 in.....	" 1.15
11 in.....	" 1.25
12 in.....	" 1.50



Fig. 399B

WOODEN FRAME GRINDSTONE FOR POWER USE

Fitted with Patent Detachable Fixture

Size	Diam. of Stone inches.	Price of Frame Only	Frame with Fixtures and 12-in. Pulley	Price Complete, including Stone fitted with Patent Detachable Fixture and 12-in. Pulley
P. 226	24	\$ 8.00	\$21.00	24 in. x 3 in. . . . \$23.00
P. 225	30	10.00	23.00	30 in. 4 in. . . . 28.00
P. 230	36	11.00	25.50	36 in. x 4 1/2 in. . . . 33.00
P. 235	42	12.00	27.00	42 in. x 4 1/2 to 5 in. 38.00
P. 240	48	13.50	33.00	48 in. x 5 1/2 to 6 in. 50.00
P. 245	54	17.50	41.00	54 in. x 6 1/2 to 7 in. 67.00
P. 250	60	24.00	48.00	60 in. x 7 1/2 to 8 in. 84.00

We furnish a 12-inch Pulley with all sizes of wood power frames. We will substitute any required size, charging only the actual difference in price.

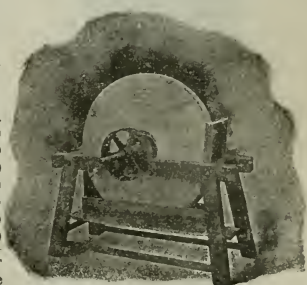


Fig. 399C

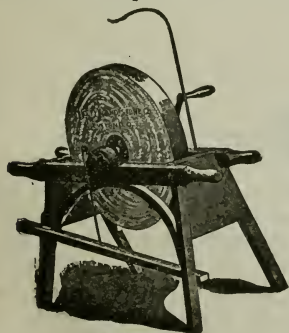


Fig. 399D

SAMSON MOUNTED

No.	Weight, lbs.	Thickness inches	Each
1	100 to 110	1 3/4 to 2 1/4	\$6.00
2	70 to 80	1 3/4 to 2 1/4	5.00
3	40 to 50	1 3/4 to 2 1/4	4.50



Fig. 399E

BI-TREADLE MOUNTED

Ball Bearing

Frame is steel firmly riveted.

Weight of stone, 55 to 60 lbs.; weight of stone and frame 80 lbs.

Each \$6.00

We can furnish any repairs desired.

FOR EMERY WHEELS, GRINDERS, AND OIL STONES, SEE INDEX

KEYSTONE IRON FRAME POWER GRINDSTONE

ALL FITTED WITH PATENT DETACHABLE FIXTURE



Fig. 508K

The trough is cast in one piece, making it water-tight, avoiding all joints which invariably work loose and leak. The legs are cast separate, and are securely fastened in place with two wrought-iron bolts. An adjustable tool rest, with drip pan, is furnished with each frame.

Number	Diameter of Stone inches	Thickness of Stone inches	Size of shaft at Bearings inches	Price Complete with Stone	Price of Frame with Shaft Pulley and Tool Rest	Price of Frame only without Shaft, Bearings or Tool Rest
No. 508K	50	7 1/2 to 8	1 3/4	\$80.00	No. 100K	\$35.00
No. 506K	50	5 1/2 to 6	1 3/4	70.00		
No. 488K	48	7 1/2 to 8	1 3/4	75.00		
No. 486K	48	5 1/2 to 6	1 1/2	68.00		
No. 485K	48	4 1/2 to 5	1 1/2	66.00		
No. 466K	46	5 1/2 to 6	1 1/2	67.00		
No. 465K	46	4 1/2 to 5	1 1/2	65.00	No. 200K	28.00
No. 406K	40	5 1/2 to 6	1 1/2	51.00		
No. 405K	40	4 1/2 to 5	1 1/4	49.00		
No. 386K	38	5 1/2 to 6	1 1/4	50.00		
No. 385K	38	4 1/2 to 5	1 1/4	48.00		
No. 366K	36	5 1/2 to 6	1 1/4	49.00		
No. 365K	36	4 1/2 to 5	1 1/4	47.00	No. 300K	21.00
No. 364K	36	4 to 4 1/2	1 1/4	46.00		
No. 305K	30	4 1/2	1	39.00		
No. 304K	30	4	1	38.00		
No. 303K	30	3 1/2	1	37.00	No. 300K	33.00
No. 302K	30	3	1	36.50		

We furnish 12-inch pulley with all sizes of Keystone Frames. We will substitute any required size, charging only the actual difference in price.

Loose pulley, 12 inches in diameter, \$3.00 extra.

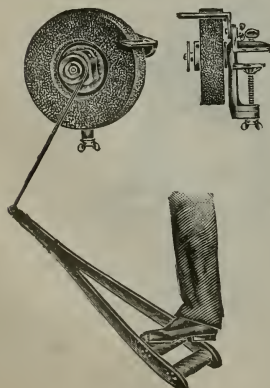


Fig. 401C

"ON THE JOB" GRINDER

We show here an emergency and portable foot-power grinder, giving 3,000 revolutions per minute; cool cutting; wheel 6x1 1/2 inches; made of genuine corundum. No belts to slip, no gears to break, no chains to stretch. We absolutely guarantee 40 per cent more utility than any other grinder on the market regardless of size or price. It is the only foot-power grinder on the market with an unlimited guarantee. Just the thing for a boat house, small shop or engine room. Weighs only 9 pounds complete. It can be attached to any bench or shelf and removed in one minute's time when done with.

Each\$6.00

FOR OTHER STYLES OF GRINDING TOOLS, SEE INDEX

CROWN GRINDERS



Fig. 1

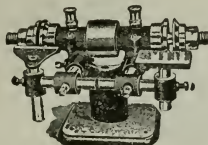


Fig. 2

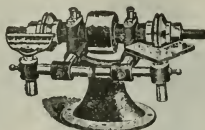


Fig. 3



Fig. 4

	No. 1	No. 2	No. 3	No. 4
For Wheels up to..... inches	8x1	10x1 1/2	12x2	16x2 1/2
Arbor to Table.....	5	6	8	9 1/2
Diameter of Base.....	5	5 1/4 x 6 1/4	9 1/4 x 6	13x9
Length of Arbor.....	10	14	18	25
Diameter between Collars.....	5/8	3/4	1	1 1/4
Diameter of Collars.....	2	2 1/4	3 1/4	4
Bearings.....	1 5/8 x 3/4	7/8 x 2	3x1 1/8	5x1 5/8
Pulley.....	2x1 5/8	2 1/4 x 2	4x3	4 3/4 x 4
Distance between Wheels.....	6 1/8	7 3/4	10	...
Weight estimated..... lbs.	10	22	42	85
Price..... each	\$5.00	\$10.00	\$15.00	\$20.00

No. 6 CROWN GRINDER

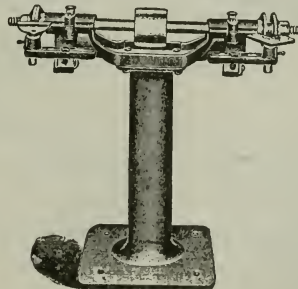


Fig. 6

This machine will meet the requirements of those needing a substantial grinding or polishing outfit at a reasonable price. All boxes are heavily babbited and fitted with grease cups. It is of good height and there is ample room from wheel to stand for plow work, grinding or polishing.

This machine with loose pulley in addition to the tight one when desired.

Arbor to Floor.....	inches	33
Size of Base.....		14x17
Length of Steel Arbor.....	"	37
Diameter between Collars.....	"	1 1/4
Diameter of Collars.....	"	4 1/2
Bearings.....	"	1 1/2 x 6
Pulley.....	"	5x4
Distance from Wheel to Stand.....	"	11 1/2
Weight complete with two Rests.....	lbs.	170
Will carry two Stones.....	inches	2 1/2 x 16
Each as per cut without Rests.....	each	\$22.40
With Loose Pulley and Grease Cup added.....	"	25.40
Rests.....	"	1.30
Disc Grinder Attachment.....	"	6.00

ELECTRICALLY-DRIVEN TOOLS

BENCH GRINDERS

These machines are of practical value for any class of grinding and may be used anywhere in shop or mill where current is available. The motor is completely inclosed, with starting and stopping device conveniently located in the base. There is practically no cost for setting up. Can also be used as portable grinders.

Extended spindle for buffer in place of one wheel can be furnished.

FLOOR GRINDERS

These grinders are very substantially and carefully made, with self-oiling bearings of large and ample size. The shaft is very stiff and tool rests are easily adjusted for any position. The motor is particularly designed for this service, completely inclosed from dirt or emery grindings, and is constructed with the greatest care in every detail. The motor frame and pedestal are one casting, and the starter is contained in the pedestal where it is out of the way and well protected.

When desired, a surface grinding attachment for one of the wheels, hoods for both wheels, or extended spindle for buffing can be supplied.

SPECIFICATIONS

Style.....	Bench No. 1	Bench No. 2	Floor
Height over all.....inches	14 ½	16 ½	48
Number of wheels.....	2	2	2
Size of wheels.....inches	8x¾x¾	12x1x¾	12x2x1
Approximate speed.....R. P. M.	2400	1800	1800
Weight.....pounds	105	200	475
Floor space.....inches	21 ½x12	23 ¾x12 ¾	30x19
Maximum horse power.....	½	1	2

PRICES

Size	110-220 V. Direct Current	110-220-440 V. A. C. 2 or 3-phase 60 cycle	110-220 V. A. C. Single-phase
No. 1 Bench	\$150.00	\$160.00	\$170.00
No. 2 Bench	180.00	190.00	200.00
Floor Grinder	274.00	284.00	294.00

These prices cover above grinders equipped with guards, wheels and water pot. Cast-iron pedestals can be furnished for either the No. 1 or No. 2 for \$24.00 additional.

The speed of these grinders will vary somewhat from the speeds given according to the voltage and kind of current ordered.

HAND GRINDERS AND BUFFERS

These portable machines are adapted not only for grinding, but also for buffing, polishing, sanding or smoothing down castings; different wheels being required for different classes of work. Can be carried from place to place, and are ready for use when plug is fitted to lamp socket. Operators can stop and start these tools instantaneously. The

motor is air cooled. Furnished with wheel, as shown.



Size of Wheel	Dimensions, inches		Wt. Lbs.	H. P.	Speed R. P. M.	Price, each		
	Machine	Motor				Direct Current	2 or 3- phase	Single- phase
5x¾x¾-in. hole	5x9 ¼x10 ½	5x7 ¾	16	¼	3600	\$90.00	\$85.00	

Wound for either 110 or 220 volts, direct or alternating current, 60 cycles.

Made in larger sizes, also with 12 and 20-inch extension arms. Prices on application.

Note.—Speeds of all the above grinders vary somewhat from those given, according to voltage and kind of current.

CROWN COUNTERSHAFTS

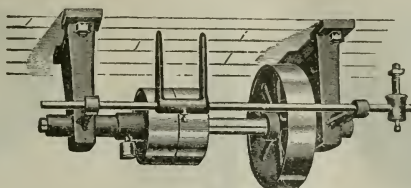


Fig. 6

All loose pulleys on Countershafts have long chamber hubs fitted with grease cup and will run for years and not wear out or wobble.

	No. 1	No. 2	No. 3	No. 4	No. 6
Drive pulleys.....in.	8 x1½	9x2	10x3 ½	12x4	13x4
Tight and loose pulleys....."	3¾ x1½	5x2	5x3	6x3 ½	6x4
Drop of hangers....."	5	6¼	6½	6½	9
Length of shaft....."	17	21	24	26	30
Diameter of shaft....."	7/8	1	1	1½	1½
Weight complete.....lbs.	24	38	44	58	75
Each.....	\$5.00	\$7.50	\$9.00	\$10.00	\$14.00

CROWN COLUMNS

The Columns have a rib around top of table to keep tools from falling off. It will be found much more economical to mount Grinder on this column than to use any temporary mounting.

	No. 1	No. 2	No. 3	No. 4
Size of table.....in.	6x8	9x11	11x13	11x15
Size of base....."	9x12	9x12	12x16	14x18
Height....."	32	32	32	28
Weight.....lbs.	32	37	75	100
Each.....	\$7.00	\$7.50	\$11.00	\$14.00

Center Shafts and Columns are for corresponding Number Grinders.

CROWN SAW GUMMERS

If Countershaft is wanted
order No. 3.

	No. 8	No. 9
Arbor to table.....in.	8	8
Size of round base....."	12	9¼
Length of steel arbor....."	14	14
Diameter of arbor in boxes....."	7/8	7/8
Diameter of collars....."	3½	3¼
Length of bearings....."	....	2½
Diameter between collars....."	¾	¾
Pulley....."	4x3	4x3
Rest will take in wheels....."	12x1¼	12x1½
Wt. about..lbs.	35	25
Each.....	\$7.00	\$5.50

Fig. 4

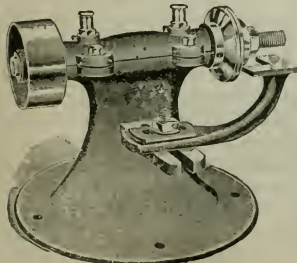


Fig. 8

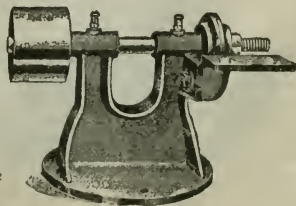


Fig. 9

KEYSEATERS, SLITTING AND SLOTTING SAWS

METAL-SPLITTING SAWS



Fig. 484A

These Saws are made of a quality of Steel exactly suiting the purpose for which they are intended. The teeth are of such shape as to render them strong and effective cutters. Hardened by an improved process and accurately ground thin towards center for clearance.

Special Saws of any pattern made to order.

Diameter	Thickness	Size of Hole	Price, each
2 1/2 inches	3/8 inch	3/8 inch	\$1.15
2 1/2 inches	3/8 inch	3/8 inch	1.20
2 1/2 inches	3/8 inch	3/8 inch	1.25
2 1/2 inches	3/8 inch	3/8 inch	1.35
2 1/2 inches	1/2 inch	3/8 inch	1.40
2 1/2 inches	3/8 inch	3/8 inch	1.50
3 inches	3/8 inch	1 inch	1.30
3 inches	3/8 inch	1 inch	1.35
3 inches	1/2 inch	1 inch	1.40
3 inches	3/8 inch	1 inch	1.50
3 inches	1/2 inch	1 inch	1.55
3 inches	3/8 inch	1 inch	1.65
4 inches	3/8 inch	1 inch	1.50
4 inches	3/8 inch	1 inch	1.55
4 inches	1/2 inch	1 inch	1.60
4 inches	3/8 inch	1 inch	1.70
4 inches	1/2 inch	1 inch	1.75
4 inches	3/8 inch	1 inch	1.85
4 inches	1/2 inch	1 inch	1.90
5 inches	1/2 inch	1 inch	1.90
5 inches	3/8 inch	1 inch	2.05
5 inches	1/2 inch	1 inch	2.15
5 inches	3/8 inch	1 inch	2.30
5 inches	1/2 inch	1 inch	2.40
6 inches	3/8 inch	1 inch	2.35
6 inches	1/2 inch	1 inch	2.54
6 inches	3/8 inch	1 inch	2.65
6 inches	1/2 inch	1 inch	2.80
6 inches	3/8 inch	1 inch	2.95
7 inches	1/2 inch	1 inch	3.00
7 inches	3/8 inch	1 inch	3.25
7 inches	1/2 inch	1 inch	3.40
7 inches	3/8 inch	1 inch	3.60
7 inches	1/2 inch	1 inch	3.75

Semi-High Speed Steel Saws advance 10%.

Formed Tooth Slitting Saws advance 25%.

SCREW-SLOTTING SAWS



Fig. 484B

Made of a quality of Steel specially suited for this purpose. Teeth of proper shape and pitch. Hardened under an improved process, not ground on sides. Made for screw-slotting only.

Prices for lots of one thousand saws and over. Smaller quantity special price.

Diameter inches	Thickness in Decimals	Size of Hole	Price Each	Diameter inches	Thickness in Decimals	Size of Hole	Price Each
2 3/4	.182	1	\$0.70	2 1/4	.023	1/2, 5/8, 3/4	
2 3/4	.162	1	.60	2 1/4	.020	1/2, 5/8, 3/4	
2 3/4	.144	1	.50	2 1/4	.018	1/2, 5/8, 3/4	
2 3/4	.126	3/4, 1	.45	2 1/4	.016	1/2, 5/8, 3/4	
2 3/4	.114	3/4, 1	.40	2 1/4	.014	1/2, 5/8, 3/4	
2 3/4	.102	3/4, 1	.35	2 1/4	.012	1/2, 5/8, 3/4	
2 3/4	.091	3/4, 1	.30	2 1/4	.010	1/2, 5/8, 3/4	
2 3/4	.081	3/4, 1	.25	2 1/4	.008	1/2, 5/8, 3/4	
2 3/4	.072	3/4, 1	.20	2 1/4	.006	1/2, 5/8, 3/4	
2 3/4	.064	1/2, 5/8, 3/4, 1	.20	2 1/4	.006	1/2, 5/8, 3/4	
2 3/4	.057	1/2, 5/8, 3/4, 1		1 3/4	.064	5/8	
2 3/4	.051	1/2, 5/8, 3/4, 1		1 3/4	.057	5/8	
2 3/4	.045	1/2, 5/8, 3/4, 1		1 3/4	.057	5/8	
2 3/4	.040	1/2, 5/8, 3/4, 1		1 3/4	.051	5/8	
2 3/4	.035	1/2, 5/8, 3/4, 1		1 3/4	.045	5/8	
2 3/4	.032	1/2, 5/8, 3/4, 1		1 3/4	.040	5/8	
2 3/4	.028	1/2, 5/8, 3/4, 1		1 3/4	.035	5/8	
2 3/4	.025	1/2, 5/8, 3/4, 1		1 3/4	.032	5/8	
2 3/4	.023	1/2, 5/8, 3/4, 1		1 3/4	.028	5/8	
2 3/4	.020	1/2, 5/8, 3/4, 1		1 3/4	.025	5/8	
2 3/4	.018	1/2, 5/8, 3/4, 1		1 3/4	.023	5/8	
2 3/4	.016	1/2, 5/8, 3/4, 1		1 3/4	.020	5/8	
2 3/4	.014	1/2, 5/8, 3/4, 1		1 3/4	.018	5/8, 1/2, 5/8	
2 3/4	.012	1/2, 5/8, 3/4, 1		1 3/4	.016	5/8, 1/2, 5/8	
2 3/4	.010	1/2, 5/8, 3/4, 1		1 3/4	.014	5/8, 1/2, 5/8	
2 3/4	.008	1/2, 5/8, 3/4, 1		1 3/4	.012	5/8, 1/2, 5/8	
2 3/4	.006	1/2, 5/8, 3/4, 1		1 3/4	.010	5/8, 1/2, 5/8	
2 1/4	.032	1/2, 5/8, 3/4		1 3/4	.008	5/8, 1/2, 5/8	
2 1/4	.028	1/2, 5/8, 3/4		1 3/4	.008	5/8, 1/2, 5/8	
2 1/4	.025	1/2, 5/8, 3/4		1 3/4	.006	5/8, 1/2, 5/8	

Special sizes made to order.

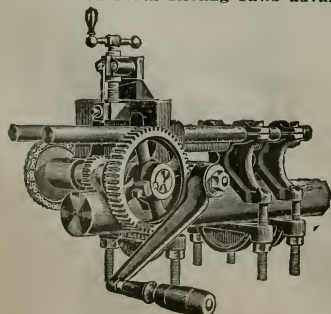


Fig. 530S

No. 1 PORTABLE SHAFT KEYSEATER

This machine will mill keyseats in shafting up to 5-in. diameter without taking the shaft down. It will mill keyseats up to 1 1/2 x 5 in., full width, at one cut. The keyseats cut have true sides and bottoms and are without chatters. The machine is self-centering and has automatic feed. Five cutters are furnished with the machine, with which keyseats from 1/4 to 1 1/2 in. wide, and varying by 1-16 in., may be cut at one operation. Each.....\$50.00

FOR COLD ROLLED SHAFTING AND SCREW STOCK
SEE INDEX

HACK SAW FRAMES, CHAIN AND BENCH DRILLS

BENCH DRILL PRESS

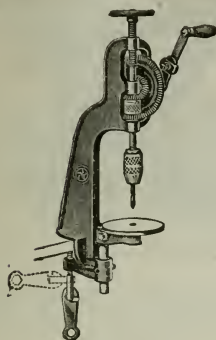


Fig. 210

Strong cast iron standard. Hand feed. Instantly changeable speed, $1\frac{1}{2}$ to 1 and 4 to 1. Adjustable crank, extensible from 3 to 6 inches in radius. Chuck of Star pattern, holding round shanks from 0 to $\frac{1}{2}$ inch; and jaws operated by springs that are protected from injury. Height over all, 24 inches. Maximum distance from chuck to table, 9 inches. Weight boxed, 27 $\frac{1}{2}$ lbs.; net, 22 lbs.
Price each\$8.00
 Packed 1 in a Wooden Box

CHAIN DRILL



Fig. 820

Free acting, hand feed. Four feet of stout chain. Ball bearing. Diameter of hole in socket, $\frac{1}{2}$ inch. Barber Improved chuck is provided, made especially for holding bit stock shanks and many sizes of round shanks. Length, with chuck inserted, 10 $\frac{1}{2}$ inches.
 No. 820. Each.....\$2.50

CHAIN DRILL

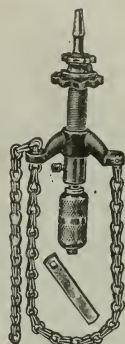


Fig. 718

Automatic, self-regulating feed or may be fed by hand. Four feet of stout chain. Ball bearing. Diameter of hole in socket, $\frac{1}{2}$ inch. Master chuck is added for holding round shanks from $\frac{1}{4}$ to $\frac{1}{2}$ inch in diameter, bit stock, and Morse taper shanks. Length, with chuck inserted, 11 $\frac{1}{2}$ inches.
 No. 718. Each.....\$3.00
 Above Drill without Master Chuck
 No. 717. Each.....2.00

STAR HACK SAW FRAME



Fig. 1027

Polished and nicked steel frame. Black composition "Pistol Grip" handle that fits any hand. Perfectly balanced frame with extra strength in the middle of the back. Blades faceable in four directions. Adjustable for blades 8 to 12 inches. Depth under back, 3 $\frac{1}{2}$ inches.
 No. 1027. Each.....\$1.50

STAR HACK SAW FRAME



Fig. 66

Tropical wood handle. Nicked steel stock, stiff strong back. Quickly adjustable for blades 6 to 12 inches. Blades are strained by turn of handle and are faceable in four directions. Depth under back, 2 $\frac{1}{2}$ inches.
 No. 66. Each.....\$1.30

No. 77



Fig. 77. Star Hack Saw Frame

Burnished and nicked steel stock, 5/32 x $\frac{1}{2}$ inch. Adjustable for blades from 8 to 12 inches in length. Blades may be faced in four different directions. Depth under back, 2 $\frac{1}{2}$ inches.
 No. 77. Per dozen.....\$6.00

RAIL HACK SAW FRAMES

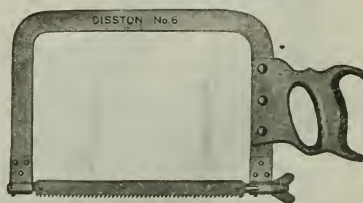


Fig. 6

Nos. 6, 7, 8, 9, 10, steel frame, polished, riveted sockets. These are specially adapted for large work, cutting off iron beams, girders, etc. and will be found a very valuable tool for contractors.
 No. 6. 7 $\frac{1}{4}$ inches inside of frame to tooth-edge, suitable for 9 inch blades; frame only. per dozen \$15.00
 No. 7. 10 $\frac{1}{4}$ inches inside of frame to tooth-edge, suitable for 12 inch blades; frame only. per dozen 18.00
 No. 8. 10 $\frac{1}{4}$ inches inside of frame to tooth-edge, suitable for 14 inch blades; frame only. per dozen 19.00
 No. 9. 10 $\frac{1}{4}$ inches inside of frame to tooth-edge, suitable for 16 inch blades; frame only. per dozen 23.00
 No. 10. 10 $\frac{1}{4}$ inches inside of frame to tooth-edge, suitable for 18 inch blades; frame only. per dozen 28.00
 Nos. 9 and 10 made with handle on each end.



Fig. 30. Cast Iron Hack Saw Frames

Cast iron, handsomely enameled. Made for 8 inch or 9 inch blades.
 No. 30. For 8 inch blades.....per dozen \$5.00
 No. 30. For 9 inch blades....." 6.00

FOR POWER HACK SAWS, SEE INDEX

MARVEL DRAW CUT HACK SAW No. 1

Saws fast and straight. Saves blades.

Is exceptionally well made, and includes the following valuable improvements:

A draw cut. An eccentric on inner portion of crank, fitted to an arm that presses against the coiled steel spring, through which extends a steel rod, hooked firmly to rear portion of saw frame bearing, the tension pressing the saw down on material on the draw cut. On return or push motion the tension releases. The tension on spring is regulated by hand nut at end of spring.

A quick action vise that saves time. Saws close to vise.

A device that raises or lowers saw and holds it at any desired angle, allowing free use of both hands in measuring material.

An extension to table so material rests on both sides of saw.

The wear can be taken up to any extent in the two saw bearings, which have also receptacles for oiled waste. The slide is of square steel set on the quarter so that wear can be taken up absolutely straight.

The drive shaft has bronze bearing.

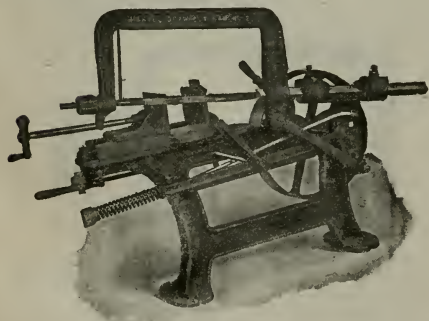
Starter and automatic stop are at front of machine.

Capacity—4x4 inches. Length of blade—12 inches. Size of pulley—13x2 3/4 inches.

Revolutions—60 to 90 per minute. Takes 2 1/2 inch belt.

Net weight—110 lbs. Shipping weight crated—120 lbs.

List price.....\$16.75



MARVEL DRAW CUT HACK SAW No. 2

With Swivel Vise that Swivels Both Ways

Saws Fast and Straight. Saves Blades

Heavy and exceptionally rigid in construction.

Pressure on saw blade is actuated by an eccentric in connection with the compression spring, alternately pressing on the draw stroke and relieving on the return stroke. The tension on spring is regulated by hand nut at end of spring.

Feed lever at top carries tension thumb screw, and should be left engaged when sawing medium or light material. The same lever raises or lowers saw and holds it in any position, a great convenience in measuring.

The quick action, heavy vise swivels both ways so that material can be inserted to cut on an angle either way.

The wear can be taken up to any extent in the two saw bearings which have also receptacles for oiled waste. The slide is of square steel set on the quarter so that the wear can be taken up absolutely straight.

The drive shaft has bronze bearing.

Starter and automatic stop are at front of machine.

Has adjustable stroke. Longest 6 3/4 inches, shortest 4 inches.

Capacity—6x6 inches on long stroke, and 8x8 inches on short stroke.

Takes blade from 12 inches to 17 inches. Revolutions—50 to 70 per minute.

Size of pulley—17x3 3/4 inches. Takes 3 inch belt.

Net weight—260 lbs. Shipping weight crated—285 lbs.

List price.....\$35.00

FOR HACK SAW BLADES, FILES, AND SCREW SLOTTERS, SEE INDEX

THE MARVEL HIGH SPEED SAW No. 5

WITH AUTOMATIC STOCK FEED

The stock feeding attachment raises the saw frame, opens the chuck, feeds the bar forward, closes chuck and starts a new cut in 0.0 seconds. The saw frame always moves in a horizontal position, is actuated by a crank lever which imparts a smooth, even cutting stroke to the saw blade, and gives a quick return.

The entire blade can be used up by shifting the saw frame by means of a right and left screw on the connecting rod while running.

The chuck has liberal dimensions with jaws which extend out flush with saw blade. It can also be shifted forward or back and will swivel to either right or left for cutting on an angle. Stops in a lot in saddle in back of machine and easy of access are two dogs, upper one of which may be instantly set to stop the cut at any desired depth. The stroke can be changed from four to six and one-half inches by means of shifting bolt in the crank.

The pump. This machine is provided with the old reliable plunger pump with ball valves and overflow tank which gives a steady stream of compound on the saw blade. It is immersed in the bottom of tank. Pump and all connections may be removed in five minutes by removal of the two cap screws on outer wall of large tank. The saw cuts on the draw stroke and lifts free of the cut on the return. Capacity, 1 inch by 6 inch.

Takes 3-inch belt. Speed, 135 R. P. M. for varied carbon steel (using short stroke on high carbon), 145 R. P. M. when all cutting is low carbon. Size of Pulley, 6x3 1/4 inches. Net weight, 565 lbs. Weight, crated, 650 lbs.

This machine can also be furnished motor driven, if desired.

List Price \$175.00

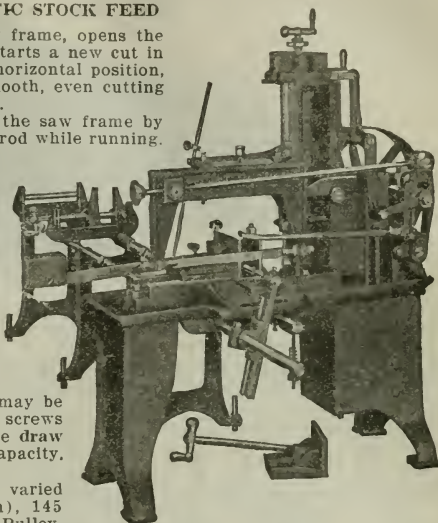


FIG. 680A

LITTLE GIANT POWER HAMMER

The main frame of this hammer is one solid casting, facilitating and simplifying erection. The ram or striking head is a steel casting with machined bearings and runs in a pressed steel channel which is provided with means for taking up wear. The dies are tempered tool steel placed in machined seats and held in position by dowel pins and keys.

The crank plate and connection between ram and crank pin, form a combination, giving to the ram a balanced reciprocating motion and a perfectly cushioned blow at both upper and lower extremities of the stroke.

Hammer has adjusting knuckle, the raising or lowering of which adjusts the hammer for work on large or small material. Crank box is brass and fitted with grease cup. Babbitted shaft boxes are long with take-up for wear.

The friction spider is keyed to shaft and has a long hub forming bearing for pulley. The pulley has compression grease cup lubricating the pulley through the hollow shaft. The friction is operated by a foot treadle provided with spring for releasing the friction automatically. The friction device disposes of the countershaft as hammer can be belted direct to line shaft and run in either direction. The dies regularly furnished are adapted for general blacksmithing. Special dies of any kind can be supplied.

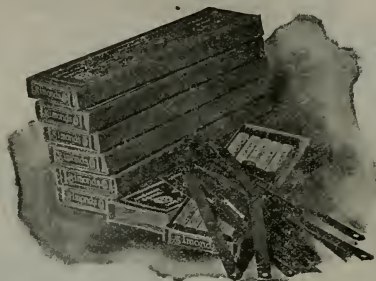


FIG. 680B

Size of Hammer and Weight of Ram	Will Forge Stock up to		Size of Dies		Size of Pulley	Rev. per Min.	H. P. Req'd	Approx. Weight lbs.	Price
	Square	Round	Upper	Lower					
25	1 1/2	2	3 x 1 1/2	3 x 2	10x3 1/2	400	1 to 2	800	\$190.00
50	2	2 1/2	3 1/2 x 1 3/4	3 1/2 x 2 1/2	12x4	325	2 to 3	1600	280.00
100	3	4	6 x 3	6 x 3	14x5	250	3 to 5	3300	560.00

HACK SAW BLADES

Prices Apply to Both ALL HARD and HARD EDGE Blades Either Hand or Power



These blades, because they cut with less resistance, remove no more metal than necessary, and outwear other makes, are the most economical Hack Saw Blades on the market.
The steel used in them is made and toughened by a special process for hard cutting service. It is the basis on which this exceptionally high grade blade is built.

PRICE LIST HAND HACK SAW BLADES

Length inches	Width inches	Gauge	Number of Teeth per Inch				List Price per gross	Number in Box, gross
			Regular	Medium	Fine	Extra Fine		
8	1/2	23	14	18	24	32	\$8.00	1/2
9	1/2	23	14	18	24	32	9.00	1/2
10	1/2	23	14	18	24	32	10.00	1/2
11	1/2	23	14	18	24	32	11.00	1/2
12	1/2	23	14	18	24	32	12.00	1/2
14	1/2 or 5/8	23	14	18	24	32	14.80	1/2
16	1/2 or 5/8	23	14	18	24	32	17.00	1/2

Odd sizes, not listed, take price of next longer or wider size of same gauge.

Regular—For cutting soft steel, iron solids, and rails.
Medium—For cutting tool steel, iron pipe, hard metals, and light angle iron.

Fine—For cutting brass, copper, drill rod, medium tubing, and sheet metals.

Extra Fine—For cutting thin tubing and thin sheet metals.

Unless specified, "Regular" blades will be sent.

RAIL OR POWER MACHINE HACK SAW BLADES

Length inches	Width inches	Gauge	Number of Teeth per Inch			List Price per gross	Number in Box, gross
			Regular	Medium	Fine		
10	5/8	21	12 or 14	18	24	\$12.00	1/2
10	5/8	21	12 or 14	18	24	13.50	1/2
12	5/8	21	12 or 14	18	24	14.40	1/2
12	5/8	21	12 or 14	18	24	16.20	1/2
14	5/8	21	12 or 14	18	24	16.80	1/2
14	5/8	21	12 or 14	18	24	18.90	1/2
17	5/8	21	12 or 14	18	24	22.95	1/2

Regular—For cutting solids in iron or steel, and for general shop saw work.

Medium—For cutting brass, castings, iron pipe, heavy tubing, etc.

Fine—Where fine tooth is deemed necessary.

We recommend (and unless otherwise specified, furnish on orders) power blades with 12 teeth, rather than 14 teeth, as they will cut faster and last longer.

HEAVY POWER MACHINE BLADES

Length inches	Width inches	Gauge	Number of Teeth per Inch			List Price per gross	Number in Box, gross
			Regular	Medium	Fine		
10	3/4	18	12	.....	.....	\$19.50	1/2
10 1/4	3/4	18	12	.....	.....	21.45	1/2
12	1	18	9 or 12	14	18	23.40	1/2
12	1	18	4, 6, 8*, or 12	14	18	29.40	1/2
14	1	18	9 or 12*	14	18	27.30	1/2
14	1	18	4, 6, 8*, or 12	14	18	34.30	1/2
14	1 1/4	18	4, 6, 8*, or 12	.....	.....	44.10	1/2
14	1	16	4, 6, or 9*	.....	.....	44.10	1/2
17	1 1/4	18	9 or 12*	.....	.....	33.15	1/2
17	1 1/4	18	4, 6, 8, or 12*	14	.....	43.65	1/2
17	1	18	4, 6, 8*, or 12	.....	.....	53.55	1/2
17	1	16	4, 6, or 9*	.....	.....	63.55	1/2
18	1	18	4, 6, 8, or 12*	.....	.....	44.10	1/2
18	1	16	4, 6, or 9*	.....	.....	56.70	1/2
20	1	18	4, 6, 8, or 12*	.....	.....	49.00	1/2
20	1	16	4, 6, or 9*	.....	.....	63.00	1/2
24	1	18	4, 6, 8*, or 12	.....	.....	58.50	1/2
24	1	16	4, 6, or 9*	.....	.....	75.60	1/2
24	1 1/4	16	4, 6, or 9*	.....	.....	120.00	1/2
30	1 1/4	16	4, 6, or 9*	.....	.....	150.00	1/2

*This number of teeth furnished unless the optional number is specified.

14 inch and 17 inch power blades measure 13 1/4 inches and 16 1/2 inches between centers of holes respectively. All other power blades measure from center to center of holes.

Odd sizes, not listed, take price of next longer or wider size of same gauge.

Unless specified, "Regular" blades will be sent.

GENUINE REED VISES

REED COMBINATION PIPE VISES

With Solid Pipe Jaw

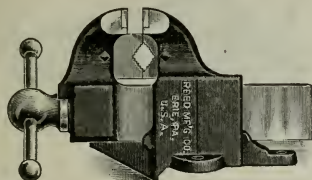


Fig. 931A. Stationary

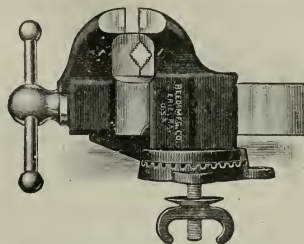


Fig. 931B. Swivel.

For severe service, and having ample cross section at all points where metal is needed. Solid tool steel pipe jaws, oil tempered with front jaw reversible. The main nut has a milled base which fits into a milled slot in the body. All jaws have hardened tool steel facings. All parts finished to limit gauges, and interchangeable. The swivel base improved by lugs on the base plate so that it may be securely bolted to the bench, instead of using wood screws.

CAPACITIES—LISTS

Number, Stationary	931	932	933	934
Number, Swivel	31	32	33	34
Width of Jaw.....inches	3 1/2	4 1/2	5	6
Capacity, Pipe....."	1/8 to 2 1/2	1/8 to 3 1/2	1/8 to 4 1/2	1/8 to 6
Weight, Stationary.....pounds	45	70	115	170
Weight, Swivel....."	46	72	119	178
Price, either style.....each	\$16.00	\$22.00	\$32.00	\$45.00
Price, Jaws (three).....per set	1.25	1.50	1.75	2.50

GENUINE REED COACHMAKERS' VISES

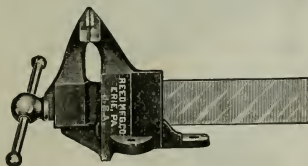


Fig. 124.

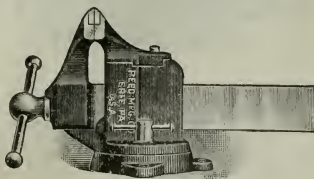


Fig. 224.

LIST

No.	Style of Base	Weight, pounds	Width Jaw, inches	Opens, inches	List Price
124	Stationary	44	4	7	\$ 8.50
124 1/2	Stationary	61	4 1/2	11	10.00
224	Swivel	52	4	7	10.50
224 1/2	Swivel	68	4 1/2	11	12.50

GENUINE REED MACHINISTS' VISES

Reed Solid Jaw Stationary Base Vise

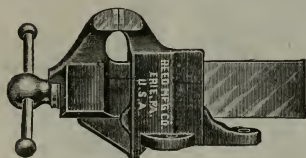


Fig. 101

No.	Width Jaw inches	Opens inches	Weight lbs.	List Price
102	2	3	11	\$4.75
102½	2½	3½	14	5.25
103	3	4	22	6.00
103½	3½	5	29	7.00
104	4	6	41	8.50
104½	4½	7	54	10.00
105	5	8	71	13.00
105½	5½	9	105	18.50
106	6	10	128	25.00
107	7	12	174	37.50
108	8	12	248	50.00
109	9	13	290	62.50

Reed Solid Jaw Swivel Base Vise

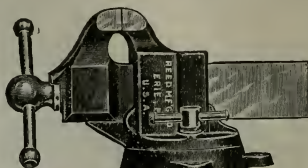


Fig. 202

No.	Width Jaw inches	Opens inches	Weight lbs.	List Price
202	2	3	13	\$5.75
202½	2½	3½	18	6.50
203	3	4	28	7.50
203½	3½	5	36	8.75
204	4	6	49	10.50
204½	4½	7	64	12.50
205	5	8	87	16.00
205½	5½	9	118	22.00
206	6	10	147	30.00
207	7	12	203	42.50
208	8	12	278	55.00
209	9	13	324	67.50

Reed Swivel Jaw Stationary Base Vise

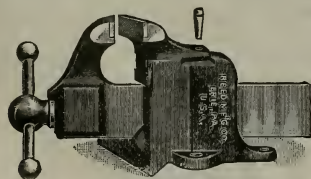


Fig. 302

Reed Swivel Jaw Swivel Base Vise

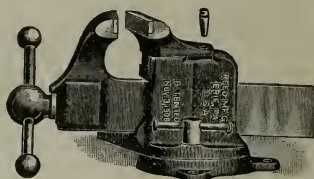


Fig. 402

No.	Width Jaw inches	Opens inches	Weight lbs.	List Price
302	2	2½	13	\$5.00
302½	2½	3	17	5.50
303	3	3½	25	6.25
303½	3½	4	34	7.00
304	4	4¾	48	9.00
304½	4½	5½	64	10.50
305	5	6½	82	14.00
305½	5½	7¾	116	17.00
306	6	9	141	24.00
307	7	11½	198	30.00
308	8	12	273	40.00

No.	Width Jaw inches	Opens inches	Weight lbs.	List Price
402	2	2½	15	\$6.25
402½	2½	3	20	6.75
403	3	3½	30	7.50
403½	3½	4	41	8.50
404	4	4¾	56	10.50
404½	4½	5½	72	12.50
405	5	6½	98	16.00
405½	5½	7¾	138	19.00
406	6	9	157	27.00
407	7	11½	218	35.00
408	8	12	300	45.00

PRENTISS' VISES

Prentiss' Patent Self-Adjusting Jaw Vises, are of superior quality and workmanship, and possess manifest advantages. With the patent swivel bottom and late improvements in manufacture, the Prentiss' Vise needs only to be seen to be approved; and being complete in itself, without "attachments," it possesses, in addition to its own peculiar advantages, all the merits claimed for other vise.

The back jaw of this Vise is Self-Adjusting and in use conforms by automatic action to any angle, adjusts itself, and makes firm the object held, whether it be straight, bevelled or wedged-shaped. By inserting pin A, the jaw becomes fixed, thus making a parallel solid jaw Vise.

The Self Adjusting Jaw, resting and working as it does upon and against the solid body of the Vise, is thereby rendered absolutely as strong and durable as a solid jaw.

PRENTISS' PATENT IRON-WORKERS' VISES

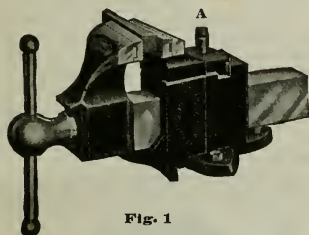


Fig. 1

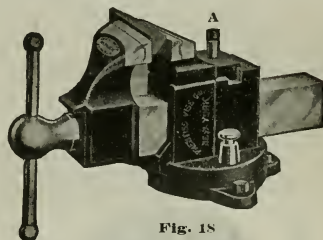


Fig. 18

Stationary Bottom,

Machinists' Self-Adjusting Jaw Vise

No. 1. Stationary bottom, 2 1/2 in. jaws. Opens 3 1/2 in. Weight 13 1/2 lbs.....	\$ 5.50
No. 2 Stationary bottom, 3 1/2 in. jaws. Opens 4 1/2 in. Weight 28 lbs.....	7.00
No. 2 1/2. Stationary bottom, 4 in. jaws. Opens 5 1/4 in. Weight 41 lbs.....	9.00
No. 3. Stationary bottom, 4 in. jaws. Opens 6 in. Weight 54 lbs.....	10.50
No. 4. Stationary bottom, 5 1/4 in. jaws. Opens 8 in. Weight 96 lbs.....	17.00
No. 5. Stationary bottom, 6 in. jaws. Opens 9 in. Weight 146 lbs.....	24.00
No. 6. Stationary bottom, 7 in. jaws. Opens 11 in. Weight 184 lbs.....	30.00

Patent Swivel Bottom,

Machinists' Self-Adjusting Jaw Vise

No. 18. Patent swivel bottom, 2 1/2 in. jaws. Opens 3 1/2 in. Weight 17 lbs..	\$ 6.75
No. 19. Patent swivel bottom, 3 1/2 in. jaws. Opens 4 1/2 in. Weight 32 lbs..	8.50
No. 19 1/2. Patent swivel bottom, 4 in. jaws. Opens 5 1/4 in. Weight 46 lbs..	10.50
No. 20. Patent swivel bottom, 4 1/2 in. jaws. Opens 6 in. Weight 65 lbs..	12.50
No. 21. Patent swivel bottom, 5 1/4 in. jaws. Opens 8 in. Weight 109 lbs..	19.00
No. 22. Patent swivel bottom, 6 in. jaws. Opens 9 in. Weight 168 lbs..	27.00
No. 23. Patent swivel bottom, 7 in. jaws. Opens 11 in. Weight 207 lbs..	35.00

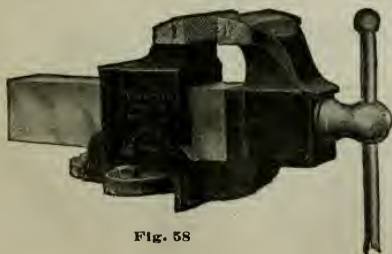


Fig. 58

HEAVY CHIPPING VISE

New solid jaw Heavy Chipping Vise, is made especially to supply the demand for a vise of this class for use in railroad and machine shops, foundries, glass works, mills and large manufactories.

This is the largest and heaviest Vise in the market and possesses all requisites to meet the heavy demands such an implement may be expected to have made upon it.

PRICE

No. 58. 8 1/2 in. jaws. Opens 12 in. Weight 275 lbs.....	\$50.00
Swivel bottom attachment for above.....	5.00

PRENTISS VISES

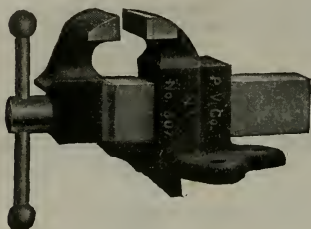


Fig. 803

Stationary Bottom.

- No. 803. Width jaw 2 in. Opens 2 in.
Weight 5½ lbs. \$ 3.50
- No. 805. Width jaw 2½ in. Opens 2¾ in.
Weight 9½ lbs. 4.75
- No. 807. Width jaw 3 in. Opens 4½ in.
Weight 15 lbs. 5.75



Fig. 804

Swivel Bottom

- No. 804. Width jaw 2 in. Opens 2 in.
Weight 6 lbs. \$ 3.90
- No. 806. Width jaw 2½ in. Opens 2¾ in.
Weight 11 lbs. 5.50
- No. 808. Width jaw 3 in. Opens 4½ in.
Weight 17½ lbs. 7.25

"MONARCH" COMBINATION PIPE VISE

A Good, Strong, Serviceable Combination Pipe Vise. Pipe Jaws Cut and Milled from Best Quality of Steel, and are Reversible, thus Giving Double Wear. Quality and finish Unsurpassed.

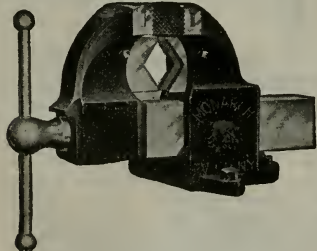


Fig. 401

Stationary Bottom

- No. 411. Jaws 3½ in. Holds ½ to 2½ in. pipe. Weight 37 lbs. \$16.00
- No. 412. Jaws 4½ in. Holds ¾ to 3 in. pipe. Weight 55 lbs. 22.00
- No. 413. Jaws 5 in. Holds ¾ to 4 in. pipe. Weight 95 lbs. 32.00

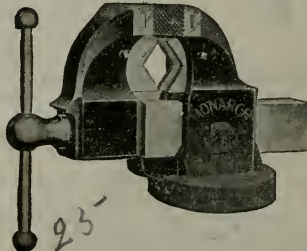


Fig. 411

Swivel Bottom

- No. 401. Jaws 3½ in. Holds ½ to 2½ in. pipe. Weight 44 lbs. \$16.00
- No. 402. Jaws 4½ in. Holds ¾ to 3 in. pipe. Weight 65 lbs. 22.00
- No. 403. Jaws 5 in. Holds ¾ to 4 in. pipe. Weight 110 lbs. 32.00

"REX" COMBINATION PIPE VISE

While these Vises Lack the High Finish for which All "Prentiss Vises" are Noted. And as the Construction and Quality of Materials Used are First-Class They are Good, Serviceable Tools, and are Sold at Extremely Moderate Prices.

Swivel Bottom

- No. 701. Jaws 3½ in. Holds ½ to 2 in. pipe. \$16.00
- No. 702. Jaws 4½ in. Holds ¾ to 3 inch pipe. 22.00
- No. 703. Jaws 5 in. Holds ¾ to 4 in. pipe. 32.00

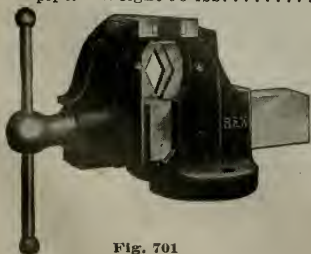


Fig. 701

PRENTISS VISES

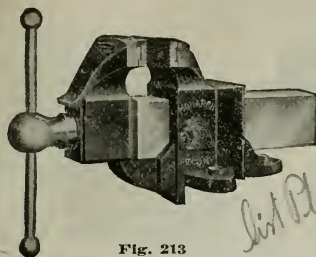


Fig. 213

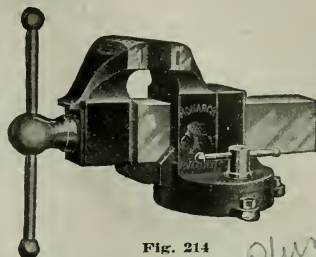


Fig. 214

"MONARCH" MACHINISTS' VISES

Stationary Bottom,

Machinists' Solid Jaw, Parallel Vise

No. 213	Stationary bottom, 3 1/2 in. jaws. Opens 4 in. Weight 22 lbs....	\$ 6.00
No. 215	Stationary bottom, 4 in. jaws. Opens 5 1/2 in. Weight 28 lbs.....	7.00
No. 217	Stationary bottom, 4 1/2 in. jaws. Opens 6 in. Weight 42 lbs....	8.50
No. 219	Stationary bottom, 5 in. jaws. Opens 7 in. Weight 52 lbs.....	10.00
No. 221	Stationary bottom, 5 1/2 in. jaws. Opens 8 in. Weight 72 lbs....	13.00
No. 223	Stationary bottom, 6 in. jaws. Opens 9 in. Weight 100 lbs.....	18.50
No. 225	Stationary bottom, 6 1/2 in. jaws. Opens 10 in. Weight 135 lbs..	25.00

Swivel Bottom,

Machinists' Solid Jaw, Parallel Vise

No. 214	Swivel bottom, 3 1/2 in. jaws. Opens 4 in. Weight 28 lbs.....	\$ 7.50
No. 216	Swivel bottom, 4 in. jaws. Opens 5 1/2 in. Weight 36 lbs.....	8.75
No. 218	Swivel bottom, 4 1/2 in. jaws. Opens 6 in. Weight 52 lbs.....	10.50
No. 220	Swivel bottom, 5 in. jaws. Opens 7 in. Weight 64 lbs.....	12.50
No. 222	Swivel bottom, 5 1/2 in. jaws. Opens 8 in. Weight 85 lbs.....	16.00
No. 224	Swivel bottom, 6 in. jaws. Opens 9 in. Weight 115 lbs.....	22.00
No. 226	Swivel bottom, 6 1/2 in. jaws. Opens 10 in. Weight 155 lbs.....	30.00

20th CENTURY PIPE VISE

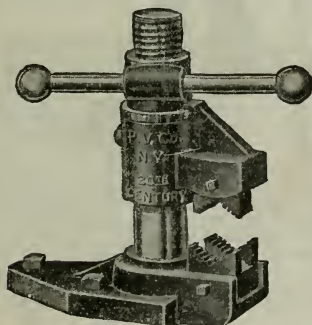


Fig. 285

Strongest Pipe Vise Made.

More Convenient and More Durable than
Old Style "Malleable Vise."

Can be Used on Bench or Post, in any Position.
Finest Finish. Best Materials.

Guaranteed Superior to any other Pipe Vise

No. 285	Holds 1/4 to 2 in. pipe. Weight 8 lbs.....	\$ 5.00
No. 286	Holds 1/4 to 3 in. pipe. Weight 18 lbs.....	7.50
No. 288	Holds 1/4 to 4 in. pipe. Weight 40 lbs.....	14.00

TABLE CLAMP VISES

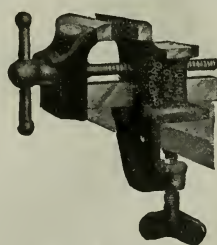


Fig. 152

These vises have wrought steel sliding bars, screws and levers. The jaws are hardened and checked. Each vise is provided with handsomely polished anvil. The screws are large and smoothly cut. The clamp is very much heavier than on other makes of Table Clamp Vises, thus insuring against breakage. The vises are very highly finished.

We guarantee these Clamp Vises, to be the strongest, best made, finest finished and most thoroughly satisfactory and attractive line of vises of this style ever offered on the market.

No. 152	Jaws 1 1/2 in. Opens 1 1/2 in. Weight 1 1/2 lbs.....	\$0.30
No. 153	Jaws 1 3/4 in. Opens 1 3/4 in. Weight 2 1/2 lbs.....	.60
No. 154	Jaws 2 in. Opens 2 in. Weight 3 lbs.....	.75

MISCELLANEOUS VISES MARVEL DRILL PRESS VISE

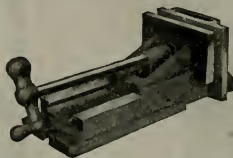


Fig. 40

This tool fills a long felt want for a work holder or vise with deep liberal jaws, the whole being of medium weight, with quick acting slideable jaw and of sufficient strength and yet not cumbersome to handle.

Is machined true on all sides, may be used laid on one side when desired, and has clamping strip around entire edge, and also an elongated slot in solid jaw suitable for clamping the vise itself or clamping bushing holders for jig work, etc.

The jaws have sufficient overhang at one side to take in long upright pieces $2\frac{1}{2}$ in. diameter on the No. 40 and 3 in. diameter on the No. 41.

	Capacity	Width of Jaws	Height of Jaws	Weight	Price
No. 40.	5 inches	$5\frac{5}{8}$ inches	$2\frac{1}{2}$ inches	28 lbs.	\$10.00
No. 41.	8 inches	7 inches	4 inches	56 lbs.	12.25

FINISHED CAST IRON V BLOCK

$2\frac{1}{2} \times 5\frac{5}{8}$ inches, to fit No. 40 Vise.....	\$2.00
4 x 7 inches, to fit No. 41 Vise.....	2.50

STEEL PARALLEL STRIPS

5 Pairs, $5\frac{5}{8}$ in. long, to build up in 1-16ths, from $\frac{1}{4}$ in. to height of jaw to fit No. 40 Vise	\$1.75
7 Pairs, 7 in. long, to build up in 1-16ths, from $\frac{1}{4}$ in. to height of jaw to fit No. 41 Vise	2.75

"MONARCH" WOOD-WORKERS' VISES

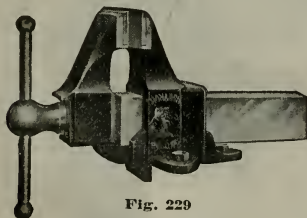


Fig. 229

Stationary Bottom

No. 229. Stationary bottom. $4\frac{1}{2}$ in. jaws.	
Opens 9 in. Weight 48 lbs.....	\$ 9.50
No. 231. Stationary bottom, 5 in. jaws.	
Opens 12 in. Weight 66 lbs.....	15.00

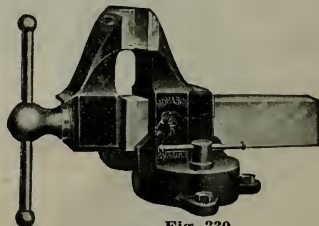


Fig. 230.

Swivel Bottom

No. 230. Swivel bottom. $4\frac{1}{2}$ in. jaws.	
Opens 9 in. Weight 58 lbs.....	\$11.50
No. 232. Swivel bottom, 5 in. jaws.	
Opens 12 in. Weight 76 lbs.....	17.50

MALLEABLE HINGE PIPE VISE

Latch Pattern

This vise is designed to give the greatest strength and durability with the least weight. The yoke, base and slide are made of malleable iron. It is fitted with self-locking latch as well as bolt and chain, and since the base has lugs on both sides, the vise may be opened either way.

Price List

No.	Capacity	Vise Complete	Extra Jaws per set of 3
1	$\frac{1}{8}$ to $2\frac{1}{2}$ inch Pipe..	\$10.00	1.00
2	$\frac{1}{4}$ to $3\frac{1}{2}$ inch Pipe..	14.00	1.50
3	$\frac{1}{2}$ to $4\frac{1}{2}$ inch Pipe..	20.00	2.25
4	$\frac{3}{8}$ to 6 inch Pipe..	50.00	10.50



Fig. 51



Fig. 51

FOR PIPE CUTTERS AND WRENCHES, SEE INDEX

VICES

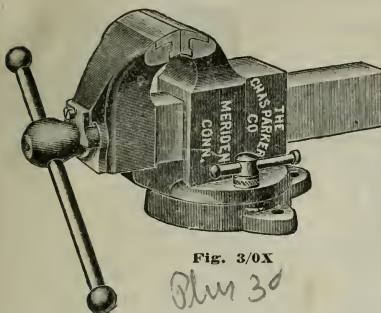


Fig. 3/0X

Plus 30

Parker Vises are adapted to locomotive works, car builders, wood workers, machinists, gun, sewing machine and carriage manufacturers, jewelers and artisans generally. These Vises are made with a patented reinforced sliding jaw, consisting of a solid steel bar inserted the entire

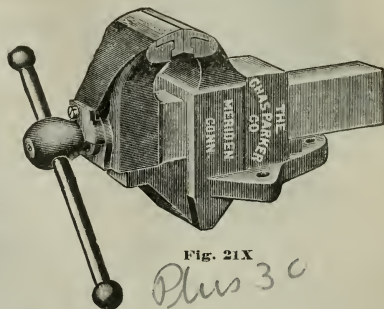


Fig. 21X

Plus 30

length of the slide, and thoroughly welded into the casting, thus rendering the slide, or movable jaw, practically unbreakable. No other Vises made have this feature, and in connection with the fact that the Vises are made from a mixture of cast iron and Bessemer steel, we unhesitatingly guarantee them to be one of the strongest and most durable Vises in the market.

PARKER'S IMPROVED SWIVEL VISES

Semi-Steel

The steel faces of Series No. 21X are milled and fitted to the jaws, and are renewable.

No.	Weight lbs.	Jaw inches	Vise Opens	List
21X	33	3 1/4	4 1/4	\$7.00
22X	52	3 3/4	5 1/2	8.75
23X	69	4 1/4	6 1/2	11.00
24X	88	4 3/4	8 1/4	14.50
25X	129	5 1/2	9 1/2	20.50
26X	176	6 1/4	10 1/2	30.00

PARKER'S IMPROVED STATIONARY VISES

Semi-Steel

The steel faces of Series No. 3/0X are milled and fitted to the jaws, and are renewable.

No.	Weight lbs.	Jaw inches	Vise Opens	List
3/0X	29	3 1/4	4 1/4	\$6.25
1X	45	3 3/4	5 1/2	7.00
2X	58	4 1/4	6 1/2	9.00
3X	76	4 3/4	8 1/4	11.75
4X	112	5 1/2	9 1/2	16.25
5X	150	6 1/4	10 1/2	24.00

"VULCAN" DROP-FORGED CHAIN PIPE VISE

For Holding Pipe, Bolts, Bars, Shafts, etc., from 1/8 to 8 Inches in Diam.

These Vises are unbreakable, compact, rapid in action and positive in gripping pipe. All are equally serviceable upon and suitable for fastening to bench or post. The smaller sizes are well adapted for carrying by hand or in tool bag.

Adjustment is quickly effected by slightly turning the screw, and further quick adjustment is gained by engaging the projecting rivets of chain with a series of bosses on base.

They are made entirely of wrought steel; the drop-forged jaws are of saw-tempered steel for file-sharpening. The hand-made chains are of same quality as those of our Vulcan Chain Pipe Wrenches; all parts are fully guaranteed.

The jaws of size No. 1 are designed to prevent the bending of weaker and smaller sizes of pipe, should an excess of chain pressure be placed upon them.

Number	For Pipe Sizes	PRICES, VISES AND EXTRA PARTS						
		Vise Complete	Jaws Pair	Chain with Screw	Screw	Handle and Nut	Nut	Weight Packed lbs.
1	1/8 to 2	\$3.50	\$1.50	\$1.25	\$0.40	\$1.10	\$0.70	4
2	1/4 to 4	7.50	3.50	2.40	.70	2.10	1.35	10
4	3/4 to 8	18.00	9.00	6.00	1.25	3.50	2.00	30

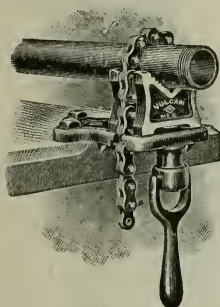


Fig. 1-2-4

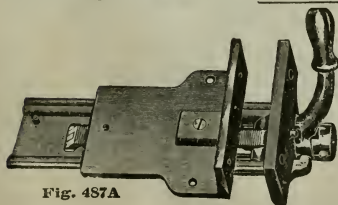


Fig. 487A

BENCH VISES

Rapid-Acting Woodworker's Vise

No.	Size Jaws inches	Jaws Open inches	Weight lbs.	Each
4	3 x 7 1/2	9	26	\$3.50
5	3 1/2 x 8	12	35	4.50

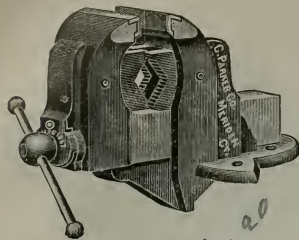


Fig. 88 1/2-89 1/2

PARKER'S COMBINATION PIPE VISES

SERIES No. 88 1/2

The steel faces of Series No. 88 1/2 are milled and fitted to the jaws, and are renewable.

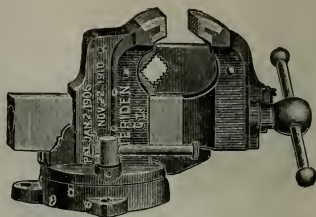


Fig. 87-288 1/2

STATIONARY

No.	Weight lbs.	Jaw Ins.	Vise Opens	Holds Pipe Ins.	List
88 1/2	94	4 3/8	6 1/2	4	\$28.00
89 1/2	141	5 3/8	9 1/2	6	35.00

SERIES No. 87-288 1/2 SWIVEL BOTTOM

No.	Weight lbs.	Jaw In.	Vise Opens	Holds Pipe Ins.	List
87	41	3 5/8	4 3/4	2	\$16.00
88	59	4 1/8	6	3	20.00
288 1/2	105	4 3/4	6 1/2	4	28.00
289 1/2	155	5 3/8	9 1/2	6	35.00

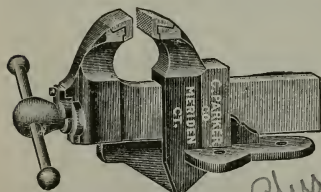


Fig. 102

PARKER'S ECLIPSE VISES

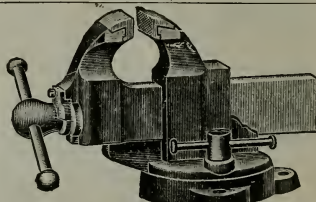


Fig. 202

STATIONARY BASE

No.	Weight lbs.	Jaw In.	Vise Opens	List
102-3	23	3	4	\$ 6.00
103-3 1/2	35	3 1/2	5	7.00
104-4	43	4	6	8.50
105-4 1/2	61	4 1/2	6 1/2	10.00
106-5	82	5	7 1/2	13.00
107-6	133	6	10	25.00

SWIVEL BASE

No.	Weight lbs.	Jaw In.	Vise Opens	List
202-3	27	3	4	\$ 7.50
203-3 1/2	42	3 1/2	5	8.75
204-4	58	4	6	10.50
205-4 1/2	76	4 1/2	6 1/2	12.50
206-5	104	5	7 1/2	16.00
207-6	158	6	10	30.00

PARKER'S IMPROVED QUICK ACTION SWIVEL VISES

Semi Steel

DIRECTIONS

In order to open the Jaws, lift the handle to a horizontal position, or as high as it will go, and draw towards you, in this way the Sliding Jaw can be moved instantly to any position. In order to grasp the work, push in the Sliding Jaw until it presses against the work; then depress the handle, which causes the Jaws to securely grasp the work.

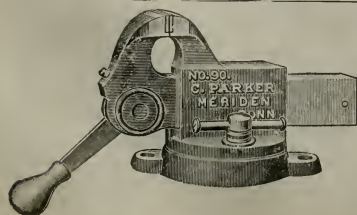


Fig. 90

No.	Weight lbs.	Jaw In.	Vise Opens	List
90	8	2	2	\$ 5.00
92	25	3	3 1/2	8.50
94	43	4	4 3/4	12.50
98	48	4	7 3/4	14.00

No. 98 Vise has Conchmakers' Jaws.

VISES

"ROCK ISLAND" DIAMOND STATIONARY VISE

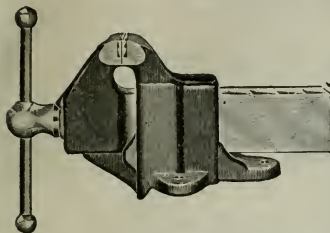


Fig. 70

This vise has all the qualities of design, strength and material of the Diamond Swivel base vise.

These vises are heavy, and the material is well distributed. All vital points are reinforced.

Material: Casting, special alloy; screw, cold rolled steel; handle, cold rolled steel; jaws, crucible cast tool steel, carefully hardened; nut, malleable iron.

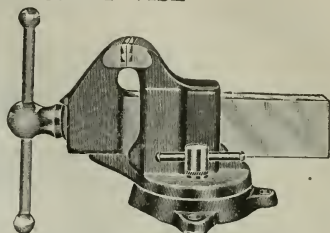


Fig. 90.

Number	Width Jaws inches	Opens inches	Weight lbs.	List Price
70	2 1/2	2 1/2	20	\$6.50
71	3	4	23	7.50
72	3 1/2	5	33	8.75
73	4	6	54	10.50
74	4 1/2	6 1/2	65	12.50
75	5	7 1/2	90	16.00
76	5 1/2	8 1/2	120	22.00
77	6	10	136	30.00
78	7	12	240	42.50

Fig. 90 "ROCK ISLAND" DIAMOND SWIVEL VISE

These vises are heavy, and the material is well distributed. All vital points are reinforced. Our Diamond vises are practically unbreakable. We guarantee to replace any that do break.

This vise can be turned in any position on an axis parallel with the floor and is locked by a clamping bolt, which works in a channel.

The grip is positive, and allows no slip.

Material: Casting, special alloy; screw, cold rolled steel; handle, cold rolled steel; jaws, crucible cast tool steel, carefully hardened; nut, malleable iron.

Number	Width Jaws inches	Opens inches	Weight lbs.	List Price
90	2 1/2	2 1/2	17	\$5.25
91	3	4	22	6.00
92	3 1/2	5	28	7.00
93	4	6	42	8.50
94	4 1/2	6 1/2	54	10.00
95	5	7 1/2	75	13.00
96	5 1/2	8 1/2	101	18.50
97	6	10	135	25.00
98	7	12	210	37.50

Fig. 240 "ROCK ISLAND" AUTOVISE

Patented

A COMBINATION PIPE VISE AND ANVIL

This vise is especially adapted for automobile repair work. There is nothing on the market so suitable for all kinds of repair work. This vise is very heavy, is made of same material as the other well-known types.

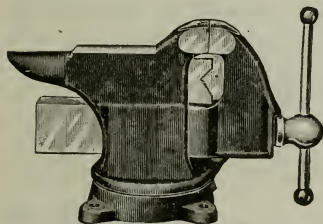


Fig. 240. Autovise

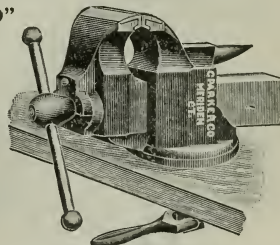


Fig. 21. Parker Vise

Number	Width Jaws inches	Capacity Pipe inches	Weight lbs.	List Price	List Price Jaws
240	3	1/2 to 1 1/2	42	\$13.00	\$1.30
241	3 1/2	3/4 to 2	80	16.00	1.50

Fig. 21 PARKER'S IMPROVED SWIVEL VISES

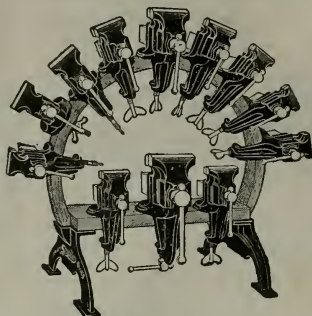
Semi-Steel—Cast Steel Anvil

The steel faces of Series No. 21 are milled and fitted to the jaws, and are renewable.

No.	Weight lbs.	Width Jaw inches	Opens inches	List Price
19	8	2	2 1/4	\$4.00
20	8 1/2	2 1/4	2 3/4	5.00
21	22	3 1/2	4	7.00
22	35	3 3/4	4 1/4	8.75

FOR FORGES, ANVILS AND ANVIL TOOLS, SEE INDEX

SMALL VISES



ASSORTMENT NO. 12

12 Vises and Display Stand. Weight 64 lbs. Assorted as Follows:

Size of Jaws	1½	1¾	2	2¼	2½	3
Clamp Base, Iron Jaws.....	2 No. 741	2 No. 742	2 No. 743	1 No. 744	1 No. 745	1 No. 746
Clamp Base, Steel Jaws.....	1 No. 761	.....	1 No. 763	.....	.....	.....
Swivel Base, Steel Jaws.....	1 No. 772	.....	.....	.....	.....	.....
List price complete assortment.....						\$14.20

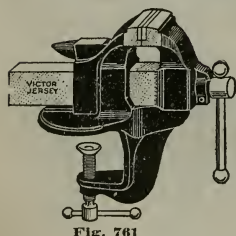


Fig. 761

VICTOR "JERSEY" VISES

Victor "Jersey" Vises are strong, serviceable tools, and have long been popular with both mechanics and amateurs. The screw (body, head and collar) is in one piece, turned from cold rolled steel, and has a square, lathe-cut thread. The steel jaws are hardened, and all jaws are ground to insure that they meet squarely when tightened. Both back and front jaws are filed to a fit.



Fig. 741

CLAMP BASE, PLAIN IRON JAWS

No.	Jaws in.	Weight lbs.	Japanned each
741	1½	3	\$0.70
742	1¾	3½	.90
743	2	3½	1.00
744	2¼	4	1.25
745	2½	5	1.50
746	3	8¾	2.00

CLAMP BASE, HARDENED TOOL STEEL JAWS

No.	Jaws in.	Weight lbs.	Japanned each
761	1½	3	\$0.95
762	1¾	3¼	1.15
763	2	3½	1.30
764	2¼	4	1.55
765	2½	5	1.85
766	3	8¾	2.50



Fig. 488

BOX VISES

In ordering extra Screws state diameter.

Width of Jaws inches	Weight lbs.	Vises each	Extra Boxes and Screws	Width of Jaws inches	Weight lbs.	Vises each	Extra Boxes and Screws
3¾	35	\$10.00	\$3.50	5½	80	\$17.50	\$4.00
4	40	10.50	3.50	5¾	90	20.00	4.50
4¼	45	11.00	4.00	6	100	22.00	7.00
4½	50	11.50	4.00	6½	120	26.00	7.00
5	60	13.00	4.00	7¼	160	41.50	9.50
5¼	70	15.00	4.00	7½	180	47.00	9.50
				8	200	56.00	9.50



Fig. 488A

Boxes and Screws

FOR COMPLETE LINES OF MACHINIST AND BLACKSMITH TOOLS, SEE INDEX

STARRETT TOOLS

BLACKSMITHS' STEEL RULES

Fig. 400
Folding

Made of best quality spring-tempered steel. Two feet long, $\frac{3}{4}$ inch wide, 12 inch joints, 2 fold. Graduated in 8ths of an inch on one side and 16ths on the other.
Price, per dozen\$6.00
Price, each50

NARROW HOOK RULES



Fig. 422

Designed for use in taking measurements through small holes where regular hook rules cannot be used. They can also be used for setting inside calipers, etc. Measurements through holes as small as $\frac{3}{4}$ inch can be obtained.

The rules are graduated one side in 32ds and the other in 64ths of an inch.

Length, inches 4 6 9 12
Price\$0.7090 1.25 1.50

STARRETT PATENT KEY-SEAT RULE



Fig. 105

The Starrett patent key seat rule is an improvement over the ordinary type in that the machinist's scale is used as part of the key seat rule. This is made possible by a device which holds two straight edges together in the form of a box square. One of these rules is a plain straight edge and the other the rule with which the machinist ordinarily works. The two edges forming the box square when applied to the surface of the cylindrical piece keep the graduated edge of the rule in a line parallel with the axis.

The steel auxiliary straight edge is either plain or graduated in 32ds, and 64ths as desired and sent when ordered. Unless otherwise ordered the key seat rule is sent without auxiliary straight edges.

Prices

No. 105A. 6 inch\$2.25
No. 105B. With auxiliary straight edge, plain, 6 inch. 2.75
No. 105C. With auxiliary straight edge, graduated, 6 inch 3.00
No. 105D. 9 inch 3.00
No. 105E. 9 inch 3.75
No. 105F. 9 inch 4.25

Where the style is not designated in an order, No. 105A will be sent.

RULES WITH THUMB SLIDE

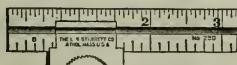
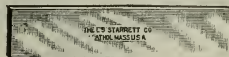


Fig. 290

Fitted with a thumb slide. Useful in measuring against a shoulder, the width of flanges, collars, etc. The slide may be used on either edge of the rule, or removed and the rule used alone. The rules are 6 inches long, about 9/16 inch wide and 1/16 inch thick.

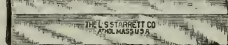
No. 290 6 inch No. 4 Graduation
No. 291 6 inch No. 1 Graduation
No. 292 6 inch No. 2 Graduation
No. 293 6 inch No. 7 Graduation
Price, each\$1.00

STEEL STRAIGHT EDGE

Fig. 380. Plain
Prices

12 inches long, 1 inch wide, 3/16 inch thick\$1.20
18 inches long, 1 1/4 inches wide, 3/16 inch thick 1.80
24 inches long, 1 1/2 inches wide, 3/16 inch thick 2.40
36 inches long, 2 inches wide, 1/4 inch thick 5.00
48 inches long, 2 1/2 inches wide, 1/4 inch thick 8.00
60 inches long, 3 inches wide, 1/4 inch thick 12.00
72 inches long, 3 inches wide, 1/4 inch thick 16.00

STEEL STRAIGHT EDGE

Fig. 385. Beveled
Prices

12 inches long, 1 inch wide, 3/16 inch thick\$1.50
18 inches long, 1 1/4 inches wide, 3/16 inch thick 2.50
24 inches long, 1 1/2 inches wide, 3/16 inch thick 3.50
36 inches long, 2 inches wide, 1/4 inch thick 6.00
48 inches long, 2 1/2 inches wide, 1/4 inch thick 10.00
60 inches long, 3 inches wide, 1/4 inch thick 15.00
72 inches long, 3 inches wide, 1/4 inch thick 20.00

One edge only is beveled, and this to 1/16 inch thick from $\frac{1}{2}$ to $\frac{3}{8}$ inch back.

COMBINATION STRAIGHT EDGE

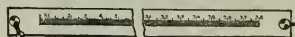


Fig. 167

The needle carriers at each end swing on taper studs, and carry needle-pointed brads frictionally held in their split ends. These may be swung to bring the points close to the working edge, and by a slight turn of a knurled nut may be rigidly locked, holding the straight edge bradded to the paper. Using one brad secured at the working edge and swinging the jointed arm, the protractor being removed, over against the straight edge to form a corner to place pencil, circular lines may be struck any desired size, and radial lines drawn to perfection. The straight edges, either graduated or plain, will be furnished with the brad carriers without the other attachments, or with any or all of them, making a complete set—the different lengths governing the price. Those having use for the set will highly appreciate it. They are also furnished plain without carriers.

Prices

	Not Graduated	Graduated in 32ds
18 inches long, 1 1/4 wide	\$2.25	\$8.00
24 inches long, 1 1/2 wide	2.75	3.50
30 inches long, 1 3/4 wide	3.50	4.75
36 inches long, 2 wide	4.25	5.50
42 inches long, 2 1/4 wide	5.00	6.75
48 inches long, 2 1/2 wide	5.75	8.00

Extra needle points, 30 cents per dozen; extra needle holders, 10 cents each. In ordering the latter, mention the width of straight edge blade.

ADJUSTABLE METAL EDGE

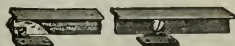


Fig. 168

We furnish a metal T rail, or straight edge with attachments to secure it to end, or end and side of drafting board or table. These are ground perfectly straight and are nickel plated. The T square used against this insures accurate results than can be obtained by working against a wooden board or table.

Prices

16 inch	\$1.35	24 inch	\$2.00	34 inch	\$2.85
18 inch	1.50	26 inch	2.20	36 inch	3.00
20 inch	1.60	28 inch	2.30	38 inch	3.20
22 inch	1.70	30 inch	2.40	40 inch	3.35
24 inch	1.80	32 inch	2.50	42 inch	3.50
26 inch	1.90	34 inch	2.65	60 inch	5.00

STARRETT TOOLS

SPECIAL STANDARD SQUARE

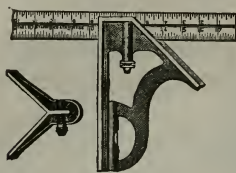


Fig. 8

Specially designed for the use of manufacturers who desire to keep a reliable standard. Hardened blade.

Prices. No Center Heads

18 inch, blade 1 1/4 inch wide, 1/16 inch thick; 3/4 inch stock, with 5 inch miter.....	\$5.00
24 inch, blade 1 1/4 inch wide, 1/16 inch thick; 3/4 inch stock, with 5 inch miter.....	6.00
Center head only, for either size, as shown under No. 17.....	1.00

COMBINATION SETS



Fig. 9

The combination square met with such universal approval from machinists that it was but a step to add to it the protractor head and have a combination set, made up of the rule on which slide the square-, center-, and protractor-heads. This makes possible more varieties of uses in laying out and testing work than are possible with any other instrument used by mechanics. Hardened blade.

Prices

9 inch, set complete.....	\$3.75
12 inch, set complete.....	4.00
18 inch, set complete.....	4.75
24 inch, set complete.....	5.25

IMPROVED BEVEL PROTRACTORS



Fig. 12

An adjustable rule, held firmly at any point by a thumb nut, passes through a revolving turret which is nicely graduated in degrees from 0 to 90, both right and left, and can be accurately adjusted to show any angle. Small level attached to the head, forming an adjustable level to show any degree, greatly increases the usefulness of the instrument. Hardened blade.

Prices

9 inch, complete.....	\$2.75
12 inch, complete.....	3.00
18 inch, complete.....	3.50
24 inch, complete.....	4.00
Protractor Head with Level attachment.....	2.00

FOR COMPLETE ASSORTMENT OF

LARGE COMBINATION SQUARES

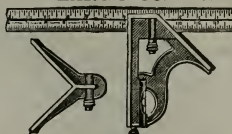


Fig. 17

The parts of this square are a little larger than in most others. This increases their usefulness and adds to their beauty. Hardened blade.

Prices

	With Center Head	Without
18 inch, blade 1 1/4 inches wide, 3/16 inch thick; 6 inch stock with 4 inch miter..	\$3.75	\$2.75
24 inch, blade 1 1/4 inches wide, 3/16 inch thick; 6 inch stock with 4 inch miter..	4.25	3.25

DROP FORGED STEEL COMBINATION SQUARES, STARRETT PATENT

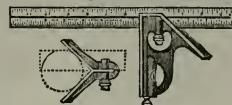


Fig. 33

Both stock and center head are hardened, as well as the blade, which is graduated with heavy figures reading both ways.

Prices

6 inch, with center head...	\$2.50	Without... \$2.00
9 inch, with center head...	2.75	Without... 2.25
12 inch, with center head...	3.00	Without... 2.50
18 inch, with center head...	3.75	Without... 3.25
24 inch, with center head...	4.25	Without... 3.75

NEW BEVEL PROTRACTOR



Fig. 490

This tool is of the same general design as our No. 12 Protractor, with the additional feature of having the head extend both sides of the blade. This greatly increases the usefulness of the tool, as the same angles may be transferred from either side of the frame without resetting. Another improvement is that the turret is graduated to read both ways from 0 to 180 degrees. With hardened blade and reversible head.

Prices

9 inch, complete.....	\$3.50
12 inch, complete.....	3.75
18 inch, complete.....	4.50
24 inch, complete.....	5.00
Protractor Head only, with Level.....	2.50

CENTER GAUGES



Fig. 390

For use in grinding and setting screw cutting tools.

Price

No. 390. Not tempered, graduated one corner each in 32ds, 24ths, 20ths and 14ths. \$0.25

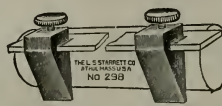


Fig. 298

KEY-SEAT CLAMPS

Designed to transform any common steel scale into a Key-Seat Rule.

They are made from steel, case-hardened, and ground accurate.

A pair weighs but one ounce. They can be put on or off almost instantly, and are a complete substitute for a more costly tool.

Blades, or with any straight rule, with accurate results.

Price

Per pair.....\$0.60

FOR COMPLETE ASSORTMENT OF MACHINISTS' TOOLS, SEE INDEX

STARRETT TOOLS.

PATENT INCLINOMETERS



Fig. 10

This cut represents an inclinometer, try square, and bevel protractor combined. It is compact, convenient, and a complete and perfect substitute for several costly tools.

It consists of a stock and disc, both slotted to receive the blade, which folds in the stock. The blade attached to the graduated rotary disc may be secured at any angle from 0 to 90 degrees, and by loosening the clamp screw it may be shortened or extended full length, or removed for a straight edge.

The working face of the stock, extending both sides of the blade, admits of its being reversed, so that the same angle may be laid off in opposite directions without changing the angle in the tool, thus requiring but 1/4 of a graduated circle to obtain all angles both ways.

At 90 degrees, the blade brings up against a case-hardened screw, accurately adjusted, thus forming a try square; by holding the blade perpendicular (the level in the stock being at right angles), a plumb; by folding the tool, a level, length of blade.

The blades are graduated one edge each in 8ths, 16ths, 32ds, and 64ths.

Prices

With 12 inch blade, without center head.....	\$4.00
With 18 inch blade, without center head.....	5.00
With 24 inch blade, without center head.....	6.00
Center head, to fit all sizes.....	.75

Sent without center head unless otherwise ordered.

PATENT PROTRACTOR

This protractor blade closes in the stock either way against a stop, making a perfect square, plumb and level. With a 24 inch blade it weighs but 1 1/4 pounds. The turret is graduated on both sides, one in degrees, the other to show pitch to the foot, so that the blade may be set by the graduation for laying off angles to any degree or any pitch, and the opposite branch of the stock will be right to lay out the complementary angle without mental calculation or error, for valley roofs, bridge work, stair gauges, etc. The levels are so arranged that work can be leveled up to any degree or pitch underneath or on top of a roof, rafter, stair stringer, etc.

Without the blade the stock may be used in contracted places as a 6 inch level and plumb, while with a 18 or 24 inch blade, a level and plumb of corresponding length is obtained. Altogether this tool makes a kit that will be appreciated by every progressive mechanic.

Prices

With 12 inch blade.....	\$4.75
With 18 inch blade.....	5.50
With 24 inch blade.....	6.00
Stock only.....	3.50

The 12 inch, 18 inch, and 24 inch blades, or our combination squares will fit the protractor stock, but the 18 inch and 21 inch lengths are best adapted for this tool.

NEW BEVEL PROTRACTOR

With Hardened Blade and Reversible Head



Fig. 400

This tool has the head extend both sides of the blade, which greatly increases the usefulness of the tool, as the same angles may be transferred from either side of the frame without resetting. Another improvement is that the turret is graduated to read both ways from 0 to 180 degrees. Mechanics will clearly appreciate this point, as direct readings may be had from the turret, indicating the supplement of the angle, as well as the angle required, so that the error is but one zero line on the frame eliminates all possible chance of confusion as to whether acute or obtuse angles are obtained.

Prices

9 inch, complete.....	\$3.50
12 inch, complete.....	3.75
18 inch, complete.....	4.50
24 inch, complete.....	5.00
Protractor Head only, with Level.....	2.50

NEW COMBINATION SET



Fig. 435

This set consists of our No. 11 Combination Square, with hardened blade and our new Reversible Protractor Head. Sent with blades of No. 4 graduation unless otherwise ordered.

Prices

9 inch, set complete.....	\$4.25
12 inch, set complete.....	4.50
18 inch, set complete.....	5.25
24 inch, set complete.....	5.75

NEW COMBINATION SET

This set consists of our No. 33 Combination Square, with hardened, drop forged stock and center head, and our No. 492 Protractor Head. Sent with blades of No. 4 graduation, unless otherwise ordered.



Fig. 433

Prices

9 inch, set complete.....	\$4.75
12 inch, set complete.....	5.00
18 inch, set complete.....	5.75
24 inch, set complete.....	6.25

PATENT DOUBLE SQUARE

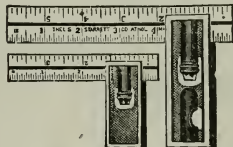


Fig. 13

The seat against which the blade is clamped being convex, should corners of the blade get injured, the accuracy of the square is not affected.

Prices

4 inch.....	\$1.25	With both blades.....	\$1.65
6 inch.....	2.00	With both blades.....	2.50
9 inch.....	3.00		
12 inch.....	4.00		

Both blades with 4 and 6 inch always sent unless otherwise ordered.

There is a level in the stocks of the 6 inch, 9 inch, and 12 inch squares.

"RELIABLE" TRY SQUARE



Fig. 60

Graduated Blade, Not Hardened

Length of Blade	Length of Beam	Price
5	2-5/16	\$1.00
5	3	1.15
6	3 3/4	1.25
9	5-1/16	2.00
12	6	2.75

GRADUATED HARDENED STEEL SQUARES



Fig. 63

Newly designed, hardened, solid steel try square; has concave depressions in each side of the stock, which reduce its weight and make it more convenient to hold between the thumb and finger while being used. The stocks are case-hardened, the blades hardened to spring-temper and graduated in 72ds of an inch on one side and 64ths on the other.

Prices

2 inch blade, full length of beam 1 1/2 inches.....	\$1.50
3 inch blade, full length of beam 2 inches.....	2.00
4 inch blade, full length of beam 2 3/4 inches.....	2.50
5 inch blade, full length of beam 3 3/4 inches.....	3.50
6 inch blade, full length of beam 5 inches.....	5.50
12 inch blade, full length of beam 6 1/2 inches.....	6.50

STARRETT TOOLS

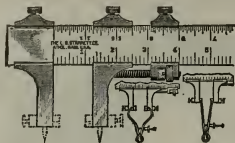


Fig. 24

MICROMETER CALIPER GAUGES

This gauge is made to fit scales $1\frac{1}{4}$ inches wide, .085 inch thick, and 12, 18, 24, and 36 inches long, affording longer scope than anything of the kind heretofore made. The head of the gauge carries auxiliary Tram Points. Attachments are also made to slip on and off the ends of the caliper, so that they may be used to set inside or outside calipers for making close or drive fits. These attachments are made of the best tool steel, hardened and ground. The inside calipers are set against the inside face of gauge and resting on the seat of the attachments, which keep them in perfect line. The outside calipers are set against an extended seat of the attachment in line with the inside faces of the gauge so that both inside and outside calipers may be set to exactly agree with each other.

For measuring distances, the gauge may not only be set by the graduated scale but varied by the micrometer adjusting nut to read additional thousandths. The scale and all necessary working parts are hardened, making a first-class tool in every respect.

Prices

12 inch	\$11.00
18 inch	12.50
24 inch	14.00
36 inch	20.00
48 inch	26.00



Fig. 424

SLIDE RULE CALIPER AND CIRCUMFERENCE GAUGE

This gauge has a double function—being graduated to read the circumference as well as the diameter of the thing measured, the relation of circumference to diameter being shown by the graduations on upper corners of the rule (capacity $2\frac{1}{4}$ inches, about 11 inches circumference). It was originally designed for rope or cordage manufacturers. It makes a first-class slide rule caliper of large scope, opening $3\frac{1}{4}$ inches. The jaws, being 1-5/16 inches deep, will caliper a cylinder up to $2\frac{1}{4}$ inches in diameter. The rule is graduated in 32ds of an inch standard and 16ths of an inch circumference measure.

Rule.—The circumference being shown by the gauge, multiply the same by the speed the lathe runs per minute and the result will show the number of inches or feet the circumference is running and the tool cutting.

Price

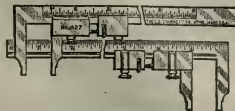


Fig. 427

CALIPER SQUARE

Designed primarily for use where extreme accuracy is not required, in measuring milled and planed surfaces, rough boring holes and in gauging duplicate pieces of work. It is made both plain and adjustable, the front side graduated to read in 64ths, and the reverse side graduated whole length in 32ds.

Prices

	In Case	Leather
4 inch plain, whole length 6 inches.....	\$6.50	\$7.50
6 inch plain, whole length 8 inches.....	8.50	9.75
4 inch adjustable, whole length 7 inches....	8.00	9.00
6 inch adjustable, whole length 9 inches....	10.00	11.50
No. 427M. In metric sizes, 40mm. and 150 mm. graduated in half millimeters on one side and millimeters on the other. Prices same as for No. 427.		



Fig. 25

CALIPER SQUARE

For both outside and inside measure. The beam is graduated in 64ths on one side and 100ths on the other.

Prices

A. 3 inch, with adjusting screw..	\$3.50	D. Without..	\$3.00
B. 4 inch, with adjusting screw..	4.00	E. Without..	3.50
C. 6 inch, with adjusting screw..	5.50	F. Without..	5.00
With hardened jaws, extra.....	1.50		
In leather case, extra.....	.75		
Sent with adjusting screw and without case unless otherwise ordered.			



Fig. 28M. Metric

MICROMETER CALIPER SQUARE

Graduated on one side in $\frac{1}{2}$ millimeters and on the other in millimeters. The micrometer head is graduated to read in 100ths of a millimeter.

Prices

10 cm., with case.....	\$ 8.75	Without.....	\$ 8.00
15 cm., with case.....	11.00	Without.....	10.00
20 cm., with case.....	15.25	Without.....	14.00
30 cm., with case.....	19.50	Without.....	18.00
Sent without case unless otherwise ordered.			

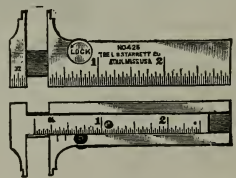


Fig. 425

POCKET SLIDE CALIPERS

Graduated in 32ds and 64ths. The improved clamping device is a valuable feature.

Prices

3 inch	\$2.00
5 inch	3.00



Fig. 426

CALIPER SQUARE

Designed both for inside and outside measurements. It is made with firm and adjustable jaw. The beam is graduated on one side in 64ths and on the other in 100ths of an inch. With the adjusting screw the sliding head can be more accurately set to the graduations than without it. Sent with adjusting screw and without case unless otherwise ordered.

Prices

A. 3 inch, with adjusting screw..	\$3.75	D. Without..	\$3.00
B. 4 inch, with adjusting screw..	4.50	E. Without..	3.50
C. 6 inch, with adjusting screw..	7.50	F. Without..	5.50
With hardened jaws, extra.....	1.50		
Leather case, extra.....	.75		
Sent with adjusting screw and without case unless otherwise ordered.			

STARRETT TOOLS

ONE INCH MICROMETER



Fig. 3

For measurement by thousandths up to one inch.
Has lock nut and ratchet stop.

Prices

No. 3	\$6.00
In leather case	6.50

QUICK ADJUSTING ONE INCH MICROMETER



Fig. 204

For measurements by thousandths up to one inch.
Has ratchet stop and lock nut.

Prices

No. 204	\$10.00
In leather case	10.50

ONE INCH MICROMETER

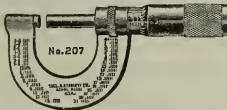


Fig. 207

For measurement by ten thousandths up to one inch.
Has lock nut but no ratchet stop.

Prices

No. 207	\$6.50
In leather case	7.00
Sent without case unless otherwise ordered.	

SCREW THREAD MICROMETERS



Fig. 575

In these Screw Thread Micrometers the movable spindle is pointed, and the end of the anvil is of the same form as the thread to be measured. In measuring screw threads the angle of point and sides of the V come in contact with the cut surface of the thread, so that the reading of the caliper indicates the pitch diameter or the full size of thread less the depth of one thread.

Prices

No.	Capacity inches	Range threads	Form of Thread	Price
575A	1	8 to 13	V & U. S. or Whit. Std.	\$7.50
575B	1	14 to 20	V & U. S. or Whit. Std.	7.50
575C	1	22 to 30	V & U. S.	7.50
575D	1	32 to 40	V & U. S.	7.50
585A	2	4½ to 7	V & U. S. or Whit. Std.	9.00
585B	2	8 to 13	V & U. S.	9.00
585C	2	14 to 20	V & U. S.	9.00
585D	2	22 to 30	V & U. S.	9.00

We can furnish these micrometers in corresponding metric sizes.

HEAVY ONE INCH MICROMETER

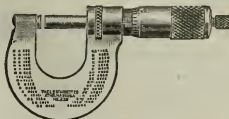


Fig. 238

This micrometer is made with the frame and the other parts much heavier than the regular one inch micrometer and will last longer under hard usage, on account of its stiffness and because of larger bearing surface for the threads. Especially useful on grinding work and wherever it is necessary to take measurements after the lock nut is set.

To prevent wear the measuring surfaces and bearing parts are hardened. These micrometers have the decimal equivalents stamped on the frame and are packed each in a strong wooden box.

For measurements by thousandths up to one inch. Has ratchet stop and lock nut.

Price

ONE INCH MICROMETER



Fig. 230

For measurement by thousandths up to one inch. The anvil is shortened for use in places where the ordinary anvil is too long to be inserted.
Has lock nut and ratchet stop.

Prices

No. 230	\$6.00
In leather case	6.50

HEAVY MICROMETERS

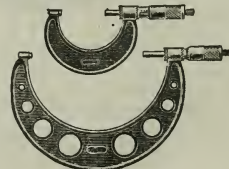


Fig. 239

Designed to meet the exacting demands of heavy and severe usage. The spindle and screw portion is of larger area than in the regular micrometer, insuring longer wear and greater rigidity; those from two inch to six inch inclusive, are made from drop forgings and the larger sizes, from seven inch to twelve inch, from steel castings. The bearing parts and measuring surfaces are hardened to prevent wear, and the same means provided for adjustment as in our other micrometers. Made with lock nut and ratchet stop. Sizes are stamped to show their capacity.

Prices

1 inch to 2 inches	\$8.00	With standard	\$9.00
Leather case, extra		With standard	\$0.75
2 inches to 3 inches	\$9.00	With standard	\$10.00
Leather case, extra		With standard	\$1.25
3 inches to 4 inches	\$10.00	With standard	\$11.15
Leather case, extra		With standard	\$1.75
4 inches to 5 inches	\$11.00	With standard	\$12.35
Leather case, extra		With standard	\$2.00
5 inches to 6 inches	\$12.00	With standard	\$13.50
Leather case, extra		With standard	\$2.25
6 inches to 7 inches	\$13.00	With standard	\$15.00
7 inches to 8 inches	14.00	With standard	16.20
8 inches to 9 inches	15.00	With standard	17.40
9 inches to 10 inches	16.00	With standard	18.60
10 inches to 11 inches	17.00	With standard	19.80
11 inches to 12 inches	18.00	With standard	21.00

Leather case not supplied for sizes above 6 inch.

Micrometers sent without case, and with standard unless otherwise ordered. Each size sent in a strong wooden box.

STARRETT TOOLS

HALF INCH MICROMETER

For measurement by thousandths up to one-half inch.

The anvil is shortened, for use in places where the ordinary anvil is too long to be inserted.

Has lock nut and ratchet stop.

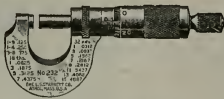


Fig. 232-233

Prices

No. 232	.....	\$5.00
In leather case	.....	5.50
No. 233	For measurement by ten thousandths up to one-half inch.	
Has lock nut, ratchet stop and short anvil.		
No. 233	.....	\$6.00
In leather case	.....	6.50

TWO INCH MICROMETER

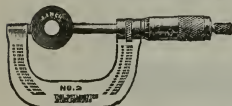


Fig. 2

For measurement by thousandths from one inch to two inches, with lock nut, ratchet stop, and one inch test gauge.

Prices

No. 2	.....	\$6.50
In leather case	.....	7.25

U. S. GOVERNMENT MICROMETER GAUGES

Designed and made to meet the requirements of the Government in making big guns and other work in the Ordnance Department of Government shops, where they are now used. The frames are cut from steel plates, nicely finished. The sides are covered with hard rubber, put on with brass screws, preventing inaccuracy through expansion caused by change in temperature when held in warm hands. The micrometer screw adjusts one inch, reading 1/1000 of an inch, and is provided with our patent lock nut. The different length tail spindles, forming anvils, are interchangeable and have positive stops to set against their socketed seats. The adjusting collars on these anvils have notches to facilitate the removal of dirt, which would prevent them from setting accurately against the seat. The contact ends of spindles are slightly convex, to prevent catching on cylindrical work. Furnished with ratchet stop or speeded screw thumb piece, as desired.

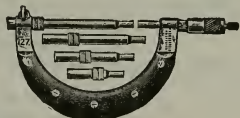


Fig. 127

Prices

No. 127A. 0 to 4 inch	.....	\$25.00
No. 127B. 4 to 8 inch	.....	37.00
No. 127C. 8 to 12 inch	.....	50.00
Furnished in case without extra charge.		
Prices on larger sizes quoted on application.		

PATENT SIX INCH MICROMETERS



Fig. 128

This micrometer will measure round work to 4 1/4 inches, and flat work to 6 inches. It weighs 21 ounces, and is rigid and accurate. It can be quickly set to exact position, from 1 inch to 6 inches, by inserting a plug as shown. A valuable feature of this tool is a set of six independent holes through both the movable part and the beam, each hole being bushed with hardened steel bushings, ground and lapped to fit the plug, which locates to exactness the various inch settings.

Price	.....	\$20.00
In leather case	.....	21.50
Sent with case unless otherwise ordered.		

QUICK ADJUSTING METRIC MICROMETER, 25 MM.

For measurements by hundredths of a millimeter up to twenty-five millimeters.

Has ratchet stop and lock nut.



Prices

No. 204M	.....	\$10.00
In leather case	.....	10.50

Fig. 204M

IMPROVED MICROMETER STAND

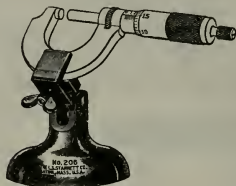


Fig. 206

Where frequent reference is to be made to a micrometer that is set at a given size, or where a number of pieces must be made of the same size it is sometimes more convenient to bring the work to the micrometer than to bring the micrometer to the work. The use of a micrometer also occupies

one hand, while, if the mechanic could use both hands he could work faster. To meet such conditions as these we offer the Starrett Improved micrometer stand. This consists of a solid base with a tilting bracket having a clamp which holds the micrometer in any convenient position. A turn of the winged nut locks in place both the hinged bracket and the micrometer. Both hands are then free for the work.

Price, each \$2.00

HUB MICROMETER

This micrometer is especially useful in the manufacture of cutters and such articles where exact hub lengths are required.

The frame will easily pass through a 3/4 inch hole. The micrometer is made for measurements by thousandths up to one inch. Has lock nut and ratchet stop.



Fig. 228

Prices

No. 228	.....	\$6.00
In leather case	.....	6.50

MICROMETER HEADS

English, One Inch



Fig. 263

lock nuts and are graduated to read to thousandths of an inch. They will be furnished without ratchet or lock nut when so desired, at same price.

Price \$3.50

BENCH MICROMETER

For measurements by thousandths or ten thousandths up to one inch.

This calliper is made with a heavy base, which makes a very rigid and accurate tool, and will be found of advantage to inspectors, watch-makers, etc., who need to take fine measurements on work of such a class that it can be better inspected when used on a bench. This micrometer can also be supplied with regular anvil and spindle in place of those shown in cut when so desired.

Made with lock nut and ratchet stop. Can be supplied without ratchet stop at reduction of 50 cents from price given.



Fig. 577

Prices

No. 577A. With fine points .075 diameter, reading by thousandths	.....	\$7.50
No. 577B. With regular points .235 diameter, reading by thousandths	.....	7.00
No. 577C. With fine points .075 diameter, reading by ten thousandths	.....	8.50
No. 577D. With regular points .235 diameter, reading by ten thousandths	.....	8.00

STARRETT TOOLS

INSIDE MICROMETERS

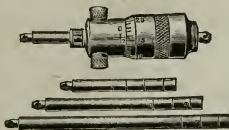


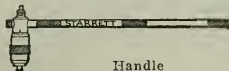
Fig. 120-A

Both have screw and nut same as our Improved No. 3 Micrometer Caliper and read in thousandths. Set A measures from 2 inches to 8 inches, has $\frac{1}{2}$ inch movement of screw and requires four extension rods. The rods are provided with a hardened steel adjustable anvil in ends, which permits adjusting for wear. A small binding screw locks rods when set. Rods are marked in $\frac{1}{4}$ inch divisions and set to a similar line on a projection of the barrel.



Fig. 120-C

Set C is similar in all respects with the exception that it measures from 8 inches to 32 inches with four extension rods, and has a lock for the rods; and has one inch movement of the screw. This is a very strong and serviceable tool as well as an accurate one. We can furnish rods of extra lengths for these tools when desired.



Handle

When so ordered an auxiliary handle accompanies Sets A, B, and D, which is used by removing the nut opposite the lock nut and screwing the handle in place of same, thereby enabling one to take measurements in holes and other places where the micrometer could not otherwise be used.

Prices

Set A. With 4 rods, to measure from 2 to 8 inches,	
with case \$4.75, without.....	\$4.00
Set B. With 7 rods, to measure from 2 to 12 inches,	
with case \$6.00, without.....	5.00
Set C. With 4 rods, to measure 8 to 32 inches,	
with case \$7.25, without.....	5.75
Set D. Comprising Sets A and C, with case \$11.25,	
without.....	9.75
Handle, extra.....	.50
Extra rods at 5 cents per inch.	
Sent with case unless otherwise ordered.	

STANDARD END MEASURING RODS



Fig. 234

These rods are made of steel, hardened and lapped spherical on the ends with a radius of one-half the length of the rod. The handles are of rubber, two-thirds the length of the rod, and guard against any expansion due to change in temperature when held in the hands, thereby maintaining their accuracy under adverse conditions. The one inch and 25 mm. are in the form of a round disc, as shown in cut.

2 inch to 6 inch are $\frac{1}{4}$ inch diameter with handles $\frac{7}{16}$ inch diameter.
6 inch to 12 inch are $\frac{3}{8}$ inch diameter with handles $\frac{5}{8}$ inch diameter.

Prices

1 inch Disc.....	\$1.00	5 inch.....	\$1.80	9 inch.....	\$2.60
2 inch Rod.....	1.25	6 inch.....	2.00	10 inch.....	2.80
3 inch.....	1.40	7 inch.....	2.20	11 inch.....	3.00
4 inch.....	1.60	8 inch.....	2.40	12 inch.....	3.20

ADJUSTABLE CALIPER GAUGE



Fig. 125

Designed for internal measurements of large cylinders and of distances between uprights. The body of the tool is a steel tube provided with a binding chuck on each of its ends. Into one end is clamped a plain rod, that, when the chuck is loosened, can be quickly adjusted to any approximate size. Into the other end is screwed a threaded anvil for fine adjustment.

Made from steel throughout, and nicely finished.

Prices

2 $\frac{1}{2}$ inch, with three rods, capacity from 2 $\frac{1}{2}$ inches to 6 $\frac{1}{2}$ inches.....	\$1.00
6 inch with three rods, capacity from 6 inches to 16 inches.....	1.25
The diameter of the steel rod is .150 inch. Extra rods furnished at 3 cents per inch.	

MICROMETER CALIPER GAUGES

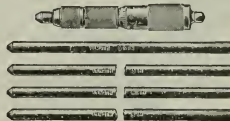


Fig. 126

Designed for close internal measurements, indicating thousandths where a definite distance in inches is not essential. The body of the tool is a steel tube, provided at one end with a binding chuck in which are fastened the plain rods, and it can quickly be adjusted to any approximate size.

Prices

Capacity 2 $\frac{1}{2}$ inch to 10 inch (with five rods).....	\$2.00
In leather case.....	2.75
Extra rods at 3 cents per inch.	
Sent without case unless otherwise ordered.	

INSIDE MICROMETERS



Fig. 121

When linear measurements are beyond the capacity of the ordinary micrometer it is frequently necessary to have a more accurate instrument than the rule or steel tape. The inside micrometers shown here were designed for and are now used by the Government in navy yards and arsenals. They consist of steel tubes with telescoping extensions combined with a one-inch screw micrometer movement. The tubes are accurately graduated and figured in inches and set to the inch marks showing the length wanted, and are firmly held by a knurled locking nut. The ends of the rods have hardened steel anvils. Combinations are possible which give a range from 32 to 107 inches and with micrometer accuracy over the whole range. A case is furnished with each set.

Prices

Set A. Stock with one rod, 32 to 57 inches.....	\$25.00
Set B. Stock with two rods, 32 to 82 inches.....	30.00
Set C. Stock with three rods, 32 to 107 inches.....	35.00

STARRETT TOOLS

TELESCOPING INSIDE GAUGE



Fig. 229

These gauges are made in sizes to enter holes from $\frac{1}{2}$ inch to 6 inches.

Prices

No. 229A.	Range, $\frac{1}{2}$ inch to $\frac{3}{4}$ inch.....	each \$1.50
No. 229B.	Range, $\frac{3}{4}$ inch to $1\frac{1}{4}$ inch.....	" 1.75
No. 229C.	Range, $1\frac{1}{4}$ inch to $2\frac{1}{4}$ inch.....	" 2.00
No. 229D.	Range, $2\frac{1}{4}$ inch to $3\frac{1}{2}$ inch.....	" 2.50
No. 229E.	Range, $3\frac{1}{2}$ inch to 6 inch.....	" 3.00

UNIVERSAL BEVEL

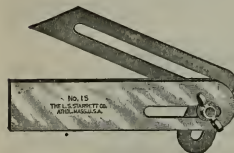


Fig. 15

Another valuable feature is, one edge of the case being solid, a rest is formed directly under the blade, where thin templates may be placed and accurately fitted.

Price, 3 inch.....\$1.50

COMBINATION BEVEL

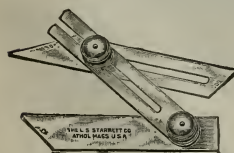


Fig. 14

ing out work, measuring, or showing any angle desired. The stock is about 4 inches long.

Price.....\$2.00

PROTRACTOR



Fig. 19

square, or for a large number of other uses which will readily occur to a machinist or draftsman, and will be found reliable and very satisfactory by any mechanic, especially those who do not care to pay for a more expensive tool.

Price.....\$1.50

These are instruments from which the exact size of holes or slots can be taken by an outside caliper or micrometer, so that shrink, close or loose fits, varying in thousandths, or less, can be made and measured.

UNIVERSAL BEVEL PROTRACTOR

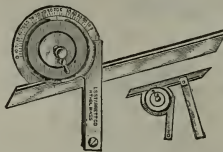


Fig. 360

When angles other than 90° and 45° are to be laid off, a protractor must be used because all angles are not obtainable with a square or bevel. The Starrett Universal Bevel Protractor is a graduated disc with a fixed blade and adjustable stock. Any given angle may be laid off or measured by setting the stock at that angle by the graduated disc. This tool has a very wide range of usefulness.

The blade is either 7 or 12 inches by $\frac{1}{2}$ inch and the stock is 4 inches long; both are made from sheet steel nicely finished. The tool weighs 6 ounces. The disc is graduated in degrees from zero to 90° each way and rotates the entire circle on a center stud.

Prices

The attachment shown in the small cut will be found convenient for grinding worm thread tools, tapers on lathe centers, and all long tapers.

No. 360A.	7 inch.....	\$6.00
No. 360B.	7 inch, in leather case.....	6.75
No. 360C.	12 inch.....	7.00
No. 360D.	12 inch, in leather case.....	8.00
No. 360E.	With both 7 and 12 inch blades.....	7.50
No. 360F.	Same in leather case.....	8.50
No. 360G.	Attachment, extra.....	1.00
No. 360B.	(7 inch in case) sent unless otherwise ordered.	

DRAFTSMEN'S PROTRACTOR

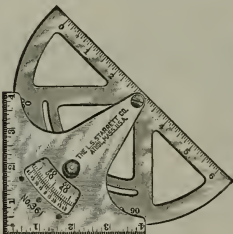


Fig. 361

This protractor is made of sheet steel, nickel plated, graduated in degrees and figured to read from either right or left, with vernier to read in five minutes. The three straight edges of the protractor are graduated in inches and 16ths, the longer part, 6 inches. The tool will lie flat on the paper. By loosening the binding nut, friction is taken off, making it easy to dust to degrees, when the tool may be again firmly locked.

This is a high grade protractor and one greatly appreciated by draftsmen.

No. 361A.	.....	\$6.50
No. 361B.	In leather case.....	7.75

UNIVERSAL BEVEL PROTRACTOR WITH VERNIER AND ACUTE ANGLE ATTACHMENT

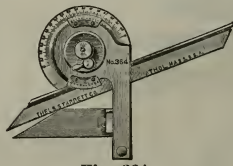


Fig. 364

This protractor is the same as No. 362, with the addition of the acute angle attachment, which enables the user to obtain very small angles.

Prices

No. 364A.	With 7 inch blade.....	\$10.50
No. 364B.	With 7 inch blade in leather case.....	11.50
No. 364C.	With 12 inch blade.....	11.50
No. 364D.	With 12 inch blade in leather case.....	13.00
No. 364E.	With both 7 and 12 inch blades.....	12.25
No. 364F.	Same as E in leather case.....	14.25

Note.—The acute angle attachment as used on the No. 364 can also be used on our No. 362 and No. 360 Protractors. Price for acute angle attachment, only.....\$2.50

STARRETT TOOLS

U. S. STANDARD SCREW PITCH GAUGE



Fig. 155

This gauge has 25 pitches, viz.: 2 $\frac{1}{4}$, 2 $\frac{3}{8}$, 2 $\frac{1}{2}$, 2 $\frac{3}{4}$, 3 $\frac{1}{8}$, 3 $\frac{1}{4}$, 3 $\frac{3}{8}$, 4, 4 $\frac{1}{8}$, 5, 5 $\frac{1}{8}$, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20.

Also a center gauge with coarse and fine notch.

Price\$1.50

WHITWORTH SCREW PITCH GAUGE



Fig. 7

Has the following pitches: 4, 4 $\frac{1}{2}$, 5, 5 $\frac{1}{2}$, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 40, 48, 60.

Price\$1.25

For Whitworth Standard Thread only.

SCREW PITCH GAUGE

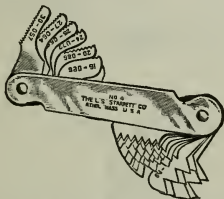


Fig. 4

Has the following pitches: 4, 4 $\frac{1}{2}$, 5, 5 $\frac{1}{2}$, 6, 7, 8, 9, 10, 11, 11 $\frac{1}{2}$, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30. The teeth are sharp and clean cut. Like our No. 40 it can be used inside of a nut as well as on outside of a screw or bolt. It is also a convenient and reliable tool to use as a 60-degree center gauge and gauge to test the grinding of either an inside or outside threading tool.

Price\$1.25

IMPROVED SCREW PITCH GAUGE



Fig. 40

If not known, the pitch of a thread may be readily determined by comparison with the standards given on our improved screw pitch gauge. On the edge of the thin leaves there are teeth corresponding to standard thread sections and by placing leaves successively over the thread some one leaf will coincide, when the pitch of the thread can be read from the stamping on the leaf.

The gauge has 22 pitches, viz.: 9, 10, 11, 11 $\frac{1}{2}$, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40.

Price\$1.00

POSITIVE STOP THREAD GAUGE

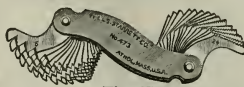


Fig. 473

This gauge has a positive stop which holds the blade in a fixed and convenient position for use. It has 30 pitches from 6 to 60 inclusive, as follows: 6, 6 $\frac{1}{2}$, 6 $\frac{3}{4}$, 7, 7 $\frac{1}{2}$, 8, 8 $\frac{1}{2}$, 9, 9 $\frac{1}{2}$, 10, 10 $\frac{1}{2}$, 11, 11 $\frac{1}{2}$, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 48, 50, 56, 60 in the other. The number of pitch is stamped on the right side of each blade.

Price\$1.50

THICKNESS GAUGE OR "FEELER"



Fig. 72

This gauge has 22 leaves, varying in thickness by thousandths, running from .004 to .025. The thickness of each leaf is designated by the number upon it. Each leaf may be used singly or in combination with others, and any thickness in thousandths within their limits may be quickly obtained. The leaves fold within the case, which is 2 $\frac{3}{4}$ inches long, a convenient size to carry in the pocket.

Price\$1.50

THICKNESS GAUGE



Fig. 172

Size A has nine leaves, viz.: .0015, .002, .003, .004, .006, .008, .010, .012 and .015.

Sizes B and C have eight leaves, the same as A with the omission of .0015.

The leaves are tempered and have the thickness marked upon them.

Size A is made with either straight leaves as shown, or with tapering leaves. Sent with straight leaves unless otherwise ordered.

No. 172A. Case 3 $\frac{1}{2}$ in. long by $\frac{1}{2}$ in. wide;

leaves 3 $\frac{1}{16}$ in. long by $\frac{1}{2}$ in. wide.....\$1.00

No. 172B. Case 4 $\frac{1}{2}$ in. long by $\frac{1}{2}$ in. wide; leaves

4 $\frac{1}{2}$ in. long by $\frac{1}{2}$ in. wide..... 1.50

No. 172C. Case 6 $\frac{1}{2}$ in. long by $\frac{1}{2}$ in. wide; leaves

6 in. long by $\frac{1}{2}$ in. wide..... 2.00

Set A will be sent unless otherwise ordered.

FILLET OR RADIUS GAUGE



Fig. 272

This gauge affords means of obtaining the radii of fillets, corners, etc., as shown by the illustrations. Each blade is stamped with the radius in 64ths, the external being on one side and the internal on the other. It can be used in any position or at any angle, the formation allowing it to be used up to a shoulder, and for duplicating sample pieces. The studs holding blades in place are eccentric with the round end of case. This is of advantage as when the gauge is opened the edge of case stands well away from the edge of blades.

Size A has 16 blades, with radii from 1/32 to 17/64 in., inclusive, by 64ths

Size B has 16 blades, with radii from 9/32 to 33/64 in., inclusive, by 64ths

No. 272A. Each

No. 272B. Each

Prices

.....\$1.00

.....\$1.50

STARRETT TOOLS

ENGINEERS' TAPER, WIRE AND THICKNESS GAUGE

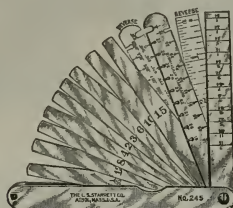


Fig. 245

Especially designed for use by marine engineers, machinists and others desiring a set of gauges in compact form. The taper gauge shows the thickness in 64ths to 3/16ths of an inch on one side, and on the reverse side is graduated as a rule three inches of its length, reading in 8ths and 16ths of an inch.

The wire gauge, English Standard, shows on one side sizes numbered from 19 to 36, with two extra slots, one 1/16, the other 3/8 of an inch, and on the reverse side shows the decimal equivalents expressed in thousandths. This gauge has also 9 thickness or feeler gauge leaves, approximately 4 inches long, of the following thicknesses: .002, .003, .004, .006, .008, .010, .012, .015 and 1/16th of an inch, all folded within the case, which is 4 3/8 inches long, convenient to handle or to carry in the pocket.

Price, each\$4.00

DEPTH GAUGE



Fig. 45

The wire in this gauge is held to a groove by a friction spring inside the nut while adjusting, and may be used close to the end, as well as in the middle of the straight edge.

By loosening the nut, the gauge may be neatly folded.

Prices

No. 45A. With 3 1/2 inch stock	\$0.75
No. 45B. With 6 inch stock	1.15
No. 45C. With 10 inch stock	1.35



Fig. 237 Price\$1.25

DEPTH GAUGE

The head of this gauge is steel, nicely finished and case-hardened; 2 inches wide across the base, 1/4 inch thick.

The blade which is conveniently held in the groove of the head by a knurled lock nut, is a 6 inch narrow spring-tempered rule, and can be used separately from the gauge. Blades graduated in 32ds and 64ths of an inch will be sent unless otherwise ordered, but we can also supply them graduated in 50ths and 100ths, or 64ths and 100ths.

PATENT INSPECTOR'S GAUGE

This gauge was designed at the suggestion of a government inspector to fill their need of a tool for measuring the thickness of ship plates, boiler plates, etc., where measure has to be taken through a bolt hole or hole drilled for the purpose.

The contact point is carried in beyond any burr formed by drilling, insuring correct measurement.

The slide measuring rod is graduated on two opposite sides, one side reading 32ds, the other 40ths. Reading from the top of the knurled friction slide, which, after the contact ends of the gauge are brought together against the thing being measured, is slipped down against the top, the graduations above it show the exact measure. Then the measuring rod may be instantly withdrawn, the hook part removed and all taken to the light and the correct measure indicated above the friction slide easily read.

The knurled nut over the split hub serves to contract same to fit close on the slide or to lock firm, making a solid gauge, convenient for any mechanic.

The gauge weighs about 1 ounce and is adapted for the vest pocket. Width, 1 inch. Capacity, 1 1/2 inch.

Price\$2.00



Fig. 30

This gauge is similar to No. 30, but is made narrower for use in smaller holes. Width, 7/16 inch. Capacity, 1-13/16 inches.



Fig. 31

Price\$3.00

HUB GAUGE

Used for measuring the length of pulley hubs, wagon wheel hubs, thickness of iron plate through holes, etc. The gauge will measure all lengths to 7 1/2 inches, and can be inserted through a 5/8 inch hole.



Fig. 430

Price\$1.50

PLANER AND SHAPER GAUGE

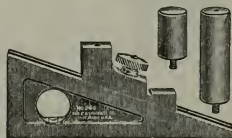


Fig. 246

The level in the base of the gauge is convenient for leveling pieces on the platen of a planer or the bed of a miller machine. Placing the square end of the level base against a finished point of work with which another point is required to be planed or milled to agree, the level used as a plumb will indicate when the position is right.

The gauge with extensions will give any height between 1/4 and 5 1/2 inches.

Price\$3.75

TOOL MAKERS' STEEL CLAMPS

Made from drop forgings, nicely finished, case-hardened, and have take-up blocks to slip on and off end of screw, and are held to same in a novel manner. They will hold work square and parallel for laying out on surface plates, fitting or drilling.

A round piece may be rigidly held in two of the clamps and drilled on an upright, central and parallel. Put up and sold in pairs. With the small block in use, the capacity of the smaller clamp is a little over one inch, and that of the larger clamp two inches.

Prices

1 inch	per pair \$1.35
2 inch	" 1.75



Fig. 160

STARRETT TOOLS

IMPROVED SCRIBER

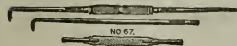


Fig. 67

Made for mechanics who want a better scriber than has been heretofore obtainable. Points are made of a fine grade of steel, nicely tempered. The knurled stock is of sufficient size to be easily held without cramping or turning in the fingers. The long, bent point will be found a valuable auxiliary for reaching through holes, etc. Length, with short, bent point, 9 inches; with long point, 12 inches. All parts are interchangeable. The knurled sleeve is nicked.

Prices

Complete	\$0.50
Without long point	.35
Straight point or short bent point, each	.10
Long bent point	.15

The tool will be sent complete unless otherwise ordered.

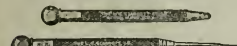


Fig. 70

POCKET SCRIBER

Made from steel tubing, knurled and nickel plated. The scriber is made from the best quality of steel, nicely tempered, and is held by a knurled chuck. It is reversible, telescoping into the stock, and is held by a slight turn of the chuck so that it is always as safe to carry in the pocket as a penknife.

Mechanics find this a convenient tool to have always with them.

Prices

No. 70A. Handle $\frac{1}{4}$ inch diameter, blade $2\frac{3}{4}$ inches long, weight 1 oz.	\$0.25
No. 70B. Handle $\frac{3}{8}$ inch diameter, blade $2\frac{3}{4}$ inches long, weight $1\frac{1}{2}$ oz.	.35

IMPROVED MERCURY PLUMB BOBS



Fig. 87B

The improvement consists of the patented device for fastening the string without a knot to tie or untie, simply by drawing it into the peculiarly slotted neck at the top, after unwinding the required length, when the bob will hang perfectly true.

These plumb bobs are made from solid steel, bored and filled with mercury. Noteworthy features are their great weight in proportion to size, low center of gravity, small diameter, hardened and ground points, knurling on the body and the simple and effective device at top for fastening end of line after winding up. Nickel plated. Each is provided with a braided silk line.



Fig. 87A

Prices

4 inches long, $\frac{1}{2}$ inch diameter, $3\frac{1}{2}$ oz.	\$1.00
5 inches long, $\frac{3}{8}$ inch diameter, 6 oz.	1.50
6 inches long, $\frac{3}{8}$ inch diameter, 12 oz.	2.00
6 inches long, 1 inch diameter, 16 oz.	2.50

LITTLE GIANT JACK SCREWS



Fig. 190

Designed for tool-room use, for leveling up work on a planer-bed or under an upright drill, setting up machinery, etc. All parts are case-hardened.

No. 190. The Jack (A) is $1\frac{1}{4}$ inch diameter at the base and has a range from $2\frac{1}{4}$ to $2\frac{3}{4}$ inches. It will raise 1,000 pounds or more. Two extension bases (B and C) are made to fit the base of the main part (A) and are 2 and 1 inch high respectively. With these two extensions used singly or together a reach from $2\frac{1}{4}$ to $6\frac{1}{2}$ inches may be obtained.

An auxiliary pointed screw (D) is supplied to be used in place of the screw with which it is furnished, where it may be preferable. The base (E) is also provided, for use in cases where such a shape may be desirable.

Prices

Jack (A)	\$0.75
Extension Base (B)	.20
Extension Base (C)	.15
Extension Base (E)	.15
Extra Screw (D)	.15
Jack, with all attachments	1.40

Sent complete (\$1.40) unless otherwise ordered.

STARRETT CLAMP DOGS

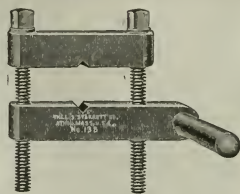


Fig. 138

Made in five sizes.

Prices

No. 138A. $\frac{3}{4}$ inch between screws	each \$0.75
No. 138B. $1\frac{1}{4}$ inches between screws	" 1.25
No. 138C. $1\frac{3}{4}$ inches between screws	" 1.50
No. 138D. $2\frac{1}{4}$ inches between screws	" 1.75
No. 138E. $2\frac{3}{4}$ inches between screws	" 2.00
Set of five sizes	7.00

STEEL DRILL BLOCKS AND CLAMP

Case Hardened

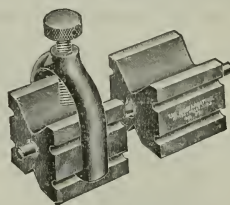


Fig. 271

These blocks are designed to be used singly or in pairs in connection with drill presses and for laying out work, prick punching, etc. The blocks may be used close together or separated and are kept in line by a spindle passing through friction bushings. They will be found convenient when holding pieces with shoulders, which may rest between the blocks. The blocks are $1\frac{1}{4}$ inches square and will hold round pieces to $1\frac{1}{4}$ inches diameter. The two grooves in each side take up the length and hold the clamp for small or large work.

Prices

No. 271A. Two Drill Blocks	\$2.00
No. 271B. Clamp	.75
No. 271C. Set, complete	2.75

DRILL BLOCKS AND CLAMP



Fig. 268B

The drill blocks are furnished in pairs. The size of each is 2 inches by $1\frac{1}{2}$ inches.

The Clamp will hold a round piece up to $1\frac{1}{4}$ inch diameter firmly in the groove of the Blocks, for prick punching, drilling or laying out a series of holes before and while being drilled.

One Clamp and two Drill Blocks, sent unless otherwise ordered.

Prices

No. 268A. Two Drill Blocks	\$1.00
No. 268B. Clamp	.50
No. 268C. Set, complete	1.50

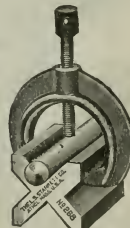


Fig. 268A

STARRETT TOOLS

HIGH SPEED INDICATOR



Fig. 104

This indicator may be run at highest speed required without heating, and this on account of our frictionless bearing against which the inner end of the spindle revolves (a Starrett feature).

The working parts of this instrument are encased, and the dial plate has two rows of figures, reading right or left, as the shaft may run.

A late improvement in this indicator consists in the rotating disc which, being carried by friction, may be moved to the starting point where the raised knobs coincide. When the spindle is placed in connection with the revolving shaft, pressing the raised knob with the thumb will prevent the disc from rotating, while the hand of the watch gets to the right position to take the time. By releasing the pressure the disc is liberated for counting the revolutions of the shaft when every 100 may be noted by feeling the knob pass under the thumb lightly pressed against it, thus relieving the eye which has only to look on the watch to note the time.

An important improvement which is now applied to all of our Speed Indicators, without extra charge, consists in adding to the hardened steel pointed spindle, rubber tips for both pointed and centered shafts, which not only remove the jar and run smoothly, but produce a stronger frictional contact between the shaft and the instrument. Nickel plated.

Prices

In pasteboard box	\$1.00
In leather case	1.50

IMPROVED STEEL INDICATOR



Fig. 106

A nicely made and finely working indicator. The working parts are inclosed like a watch, and as well made. The graduations show every revolution, and with two rows of figures read both right and left as the shaft may run. While looking at the watch each hundred revolutions may be counted by allowing the oval headed pin on the revolving disc to pass under the thumb as the instrument is pressed to its work.

This indicator is equipped with a rolling disc, as described above in our high speed indicator.

The instrument is nickel plated, and has a rubber handle, so that it will not heat the fingers when run at high speed.

Every indicator is warranted first-class.

Prices

In pasteboard box	\$1.50
In leather case	2.00

SURFACE GAUGES



Fig. 52

The sleeve and needle clasp, when loosened for adjustment, are both held by a slight spring friction, and by a single knurled nut both are rigidly clamped. For fine adjustment, the spindle in the base is raised or lowered by a knurled nut, and all backlash is taken up by a spiral spring in the base.

For above 12 inch lengths, an extension is provided to couple on to the spindle.

Prices

No. 52A. 8 inch	\$2.00
No. 52B. 12 inch	2.75
No. 52C. 12 inch with 6 inch extension	3.25
Sleeve alone . . . . .	.75

MICROMETER SURFACE GAUGE

This gauge has a turned and polished base, a micrometer adjusting nut reading two thousandths, and a six inch extension for the spindle. By means of springs and taper fitting parts of the sleeve (not shown in cut) the scriber is held by slight friction in any position while adjustments are made and firmly held by a turn of the nut. A knurled cam on the base releases and locks the spindle for adjusting.

Prices

No. 53A. 8 inch, without extension	\$2.50
No. 53B. 12 inch, without extension	3.50
No. 53C. 12 inch, with 6 inch extension	4.00



Fig. 53

THE FAY PATENT OUTSIDE AND INSIDE CALIPERS

With Spring Nut

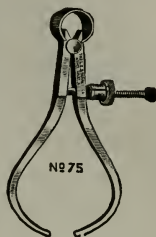


Fig. 75



Fig. 74

Prices

Outside, No. 75			Inside, No. 74		
	Spring Nut	Solid Nut		Spring Nut	Solid Nut
2 1/2 inch	\$1.15	\$1.00	2 1/2 inch	\$1.15	\$1.00
3 inch	1.15	1.00	3 inch	1.15	1.00
4 inch	1.25	1.10	4 inch	1.25	1.10
5 inch	1.25	1.10	5 inch	1.25	1.10
6 inch	1.50	1.35	6 inch	1.50	1.35
8 inch	1.75	1.60	8 inch	1.75	1.60

These calipers will be sent with Spring Nut unless otherwise ordered.

STARRETT TOOLMAKERS' CALIPER AND DIVIDERS



Fig. 277

This cut represents a line of Calipers and Dividers made from round stock with legs drawn down, making them hard and stiff. The fulcrum stud is hardened, bows extra strong, screw and nut nicely fitted, all finely finished and are the best tools in their line. They are made with solid nut only.

Prices

2 inch	each	\$1.00
3 inch	"	1.25
4 inch	"	1.50
5 inch	"	1.50
6 inch	"	1.75

TOOLMAKERS' CALIPERS AND DIVIDERS

Prices

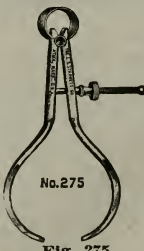


Fig. 275

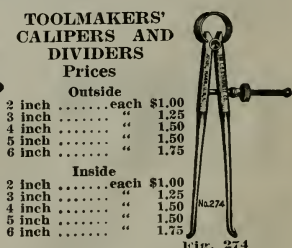


Fig. 274

Outside			Inside		
2 inch	each	\$1.00	2 inch	each	\$1.00
3 inch	"	1.25	3 inch	"	1.25
4 inch	"	1.50	4 inch	"	1.50
5 inch	"	1.50	5 inch	"	1.50
6 inch	"	1.75	6 inch	"	1.75

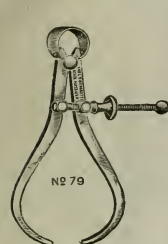
DUPLICATE PARTS TOOLMAKERS' CALIPERS AND DIVIDERS

Prices

Screw and ball	\$0.15	Spring	\$0.25
Thumb attachment . . . . .	.15	Jam washer . . . . .	.10
Nut . . . . .	.10	Fulcrum stud . . . . .	.10
Leg . . . . .	.35		

STARRETT TOOLS

YANKEE OUTSIDE AND INSIDE CALIPERS



Yankee Callipers and Dividers are manufactured under the Fay patent, are not quite so heavy as the Fay, and cost less. They are much liked, and on account of price are preferred by many to the higher cost tools.

All sizes are supplied with either solid or quick adjusting nut.

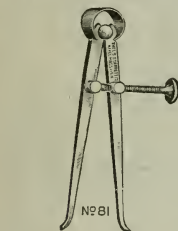
No. 73 represents a new Yankee Inside Transfer Caliper with either spring or solid nut. The bow is stiff, making the caliper reliable. After caliper inside of chambered cavity by springing in the legs they may be withdrawn, and as they spring back will show the exact size calipered.

Prices, No. 79 or No. 73

2½ inch, with solid nut...	\$0.65	With spring nut...	\$0.80
3 inch, with solid nut...	.70	With spring nut...	.85
4 inch, with solid nut...	.75	With spring nut...	.90
5 inch, with solid nut...	.80	With spring nut...	.95
6 inch, with solid nut...	.85	With spring nut...	1.00
8 inch, with solid nut...	1.00	With spring nut...	1.15
10 inch, with solid nut...	1.35	With spring nut...	1.50
12 inch, with solid nut...	1.50	With spring nut...	1.65

Sent with solid nut, unless otherwise ordered.

YANKEE INSIDE AND KEYHOLE CALIPERS



Prices

Inside, No. 81

4 inch, with solid nut.....	each	\$0.75
5 inch, with solid nut.....	"	.80
6 inch, with solid nut.....	"	.85

Keyhole, No. 82

	Solid Nut	Spring Nut
3 inch.....	each \$0.70	\$0.85
4 inch.....	each .75	.90



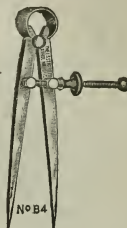
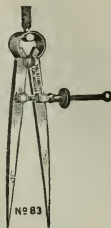
CRANK SHAFT CALIPERS

These calipers were designed to use in turning automobile crank shafts and for reaching into difficult places. They are very stiff and nicely finished and can be depended upon for accurate results. Made in one size only.

Prices

6 inch, with solid nut.....	each	\$1.00
6 inch, with spring nut.....	"	1.15
Sent with solid nut unless otherwise ordered.		

YANKEE SPRING DIVIDERS



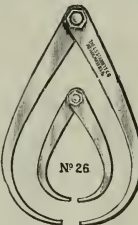
Prices (either style No. 83 or No. 84)

2½ inch, with solid nut...	\$0.65	With spring nut...	\$0.80
3 inch, with solid nut...	.70	With spring nut...	.85
4 inch, with solid nut...	.75	With spring nut...	.90
5 inch, with solid nut...	.80	With spring nut...	.95
6 inch, with solid nut...	.85	With spring nut...	1.00
8 inch, with solid nut...	1.10	With spring nut...	1.25
10 inch, with solid nut...	1.35	With spring nut...	1.50
12 inch, with solid nut...	1.50	With spring nut...	1.65

Sent with solid nut, unless otherwise ordered.

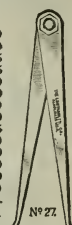
IMPROVED FIRM-JOINT CALIPERS

Prices



3 inch.....	\$0.40
4 inch.....	.50
5 inch.....	.55
6 inch.....	.65
8 inch.....	.80
10 inch.....	.90
12 inch.....	1.00
14 inch.....	1.50
16 inch.....	1.75
18 inch.....	2.10
20 inch.....	2.50
24 inch.....	3.00
30 inch, No. 26 only.....	5.00
36 inch, No. 26 only.....	6.00

The above sizes refer to the length of the calipers.



Their capacity is about one-third greater than the size given; for example, the 30 inch size will caliper 38 inch, and the 36 inch size will caliper 46 inch diameter.

The improvement in these calipers consists in the construction of the joint, which is so made as to be drawn together by means of a screw. The main stud is squared and fitted to one leg, thus preventing the stud from turning when loosening and tightening, and insuring a smooth and uniform friction of more or less tension to suit the user.

The quality of these calipers is incomparably superior to that of any old style riveted-joint caliper on the market.

YANKEE THREAD CALIPERS

Prices

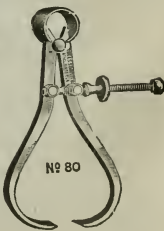
3 inch, with solid nut.....	\$0.85
4 inch, with solid nut.....	.90
5 inch, with solid nut.....	.95
With spring nut.....	1.00
With spring nut.....	1.05
With spring nut.....	1.10

Sent with solid nut unless otherwise ordered.

DUPLICATE PARTS OF YANKEE CALIPERS OR DIVIDERS

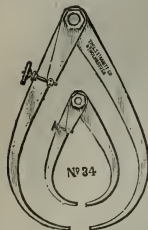
Prices

Screw and Ball.....	\$0.15
Thumb Attachment.....	.15
Solid Nut.....	.10
Spring Nut.....	.25
Leg.....	.25
Spring.....	.25
Jam Washer.....	.10
Fulcrum Stud.....	.10
.....	.10



STARRETT TOOLS

PERFECTED FIRM-JOINT SCREW ADJUSTING CALIPERS



Prices

4 inch.....	\$0.90
6 inch.....	1.00
8 inch.....	1.25
10 inch.....	1.50
12 inch.....	1.75
14 inch.....	2.00
16 inch.....	2.25
18 inch.....	2.50
20 inch.....	2.75
24 inch.....	3.50
30 inch, No. 34 only.....	6.00
36 inch, No. 34 only.....	7.00



LOCK-JOINT TRANSFER CALIPERS

Prices



4 inch.....	\$1.25
5 inch.....	1.40
6 inch.....	1.50
8 inch.....	1.75
10 inch.....	2.00
12 inch.....	2.25
14 inch.....	2.50
16 inch.....	2.75
18 inch.....	3.00
20 inch.....	3.50
24 inch.....	4.25



These instruments may be used inside of chambered cavities, over flanges, etc., removed and replaced without losing the size calipered. This is done by loosening the nut binding one arm to the auxiliary leaf and swinging it out or in (while the joint is locked) to clear the obstruction, then moving it back against a stop where it will show the exact size measured.

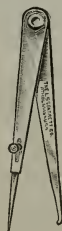
The sizes given refer to the length of the calipers, but the outside ones will caliper a cylinder 20 per cent. larger than their length, and the inside calipers will open nearly twice their length.

FIRM-JOINT HERMAPHRODITE CALIPERS

These calipers have an adjustable point, as well as the improved firm-joint. This joint, with its smooth and uniform friction, is incomparably superior to the old style riveted joint.

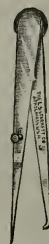
Prices

4 inch.....	\$0.65
6 inch.....	.80
8 inch.....	1.00
10 inch.....	1.20



No. 41

HERMAPHRODITE CALIPERS



No. 42

With adjustable point, lock-joint and sensitive adjustment.

Prices

4 inch.....	\$1.00
6 inch.....	1.15
8 inch.....	1.35
10 inch.....	1.60

DOUBLE CALIPERS



These instruments will, as will be seen from the engraving, combine dividers, inside and outside calipers. They have the improved firm friction joints.

Prices

6 inch.....	\$1.25
8 inch.....	1.50

CALIPERS



No. 444

These calipers may be used for inside or outside work. They have the improved firm friction joints and sensitive screw adjustment.

Prices

6 inch.....	\$1.25
8 inch.....	1.50

STARRETT TOOLS

UNIVERSAL DIVIDERS

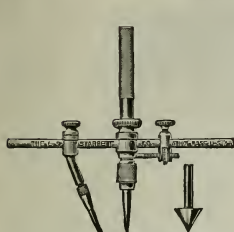


Fig. 89

drawn. The V center point may be substituted for the regular point, adapting the tool for scribing around a drilled hole. We also furnish a pen attachment.

Prices

Tool with 4 inch beam and V center point.....\$1.75

List of Extras

A. Extra steel points.....	each	\$0.10
B. Needle points.....	"	.15
C. Pen attachment.....		1.00
D. Extra straight point and socket.....		.50
E. Extra 13-inch beam to scribe 25 inch circle.....		.25
F. Coupling.....		.35

Total for tool and all attachments.....\$4.00
Tool and V center point listing at \$1.75 sent unless otherwise ordered.

PATENT DIVIDERS



Fig. 92

Both points are crucible forged steel, nicely tempered. The quadrant passes through the leg and the clamp screw frictionally locks it firm. The screw threads have stock enough to last a lifetime. After fine adjustments are made, our patent lock nut between the arms locks the spring in the leg firm, curing the defect in the old style dividers of the points dodging out and in with the grain of the wood. The adjustable point may be instantly removed and a common pencil inserted in its place. The dividers are light yet rigid and pretty to handle, and are worth twice the price of the cheap malleable dividers now on the market.

Prices

Inches	6	7	8	9
Plain.....	\$0.85	\$0.90	\$1.00	\$1.15
Nickeled.....	1.10	1.15	1.25	1.40

Sent plain unless otherwise ordered.

BALL POINTS

For Use With No. 51 and No. 59 Trammels



Fig. 88

When it is necessary to use a hole as center for dividers or trammels it is, of course, impossible to use an ordinary divider point. In such cases the Ball Point placed in the hole and bearing against the edges forms a seat for the divider leg in scribing circles or arcs around the hole. For very accurate work, however, the Ball Point is not recommended for it is impossible to keep the center exactly.

This set consists of four balls, 1-9/16 inch, 1 inch, 3/4 inch and 1/2 inch diameter, respectively.

In ordering this set for use with trammels, please give tool number of the trammel so that the proper holder may be sent.

Prices

Complete, 4 balls and holder.....	\$1.25
Either ball or holder.....	.25

EXTENSION BEAM TRAMMELS

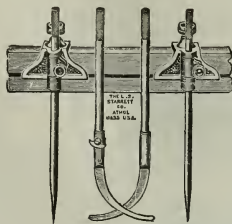


Fig. 51. Nickel Plated

One of the caliper legs is provided with a joint, worked by an eccentric thumb piece for fine adjustments.

This cut represents a pair of Trammel Heads, with an opening through the under side to accommodate the extension, giving width and stiffness in proportion to the length required for large work, while it is equally well adapted to receive a narrow beam for light work.

The points are eccentric, and may be loosened and rotated in their sockets to make fine adjustments. Either point may be removed and a common pencil inserted.

Prices

No. 51A. Complete.....	\$3.25
No. 51B. Without caliper legs.....	2.50

Sent complete (No. 51A) unless otherwise ordered.

NEW TRAMMELS

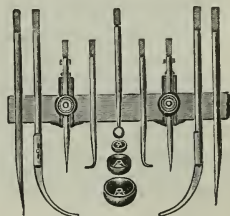


Fig. 59A

This cut shows the Trammels fastened to a wooden beam, which may be any size from 3/4 inch to 1 1/2 inches wide, and of any thickness desired (requiring no fitting), giving stiffness according to the length and adapting it for small or large work.

The auxiliaries designed to go with the trammel heads are as shown above, viz., inside and outside caliper legs, an extra pair of long points, a set of four ball points with holder, which enable one to scribe a circle from the center of any hole up to 1 1/2 inches and under. A lead pencil may be used in place of either of the steel points. The clamping device is adapted to take in either a small or common sized pencil. The Trammels are furnished with or without auxiliaries.

The small engraving to the left gives a more detailed representation of one of the heads.

Prices

No. 59A. Trammel Heads (with one pair of points).....	\$2.00
No. 59B. Balls and holder, per set.....	1.25
No. 59C. Small Caliper legs, per pair.....	.50
No. 59D. Large Caliper legs, per pair.....	.75
No. 59E. Large divider points, per pair.....	.50
No. 59F. Set, complete.....	4.75

Trammel Heads with one pair of points (No. 59A) will be sent unless otherwise ordered.



Fig. 59 B

STARRETT TOOLS

ADJUSTABLE BENCH LEVELS

With ground and graduated vials—accurate and very sensitive.

These levels are so constructed that they can be accurately adjusted, and when so adjusted are not liable to get out of truth, the vials being set in tubes having solid ends which are firmly clamped to the base. The tubes are nickel plated, the bases japanned or nickel plated. The outer tube may be turned so as to protect the glass when not in use. These levels have longitudinal grooves.

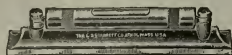


Fig. 95. 4 in. 6 in., and 8 in. Sizes



Fig. 95. 12 in. Size. The 18 in. is Similar, but with Double Plumb

No. 95

Prices

4 inch, with plain vial.....	\$1.00
6 inch, with plain vial.....	1.25
8 inch, with plain vial.....	1.50
12 inch, with plain vial, with plumb.....	2.00
18 inch, with plain vial, with double plumb.....	3.00

Either size, nickel base, 25 cents extra.

No. 96

Prices

4 inch, with ground and graduated vial.....	\$2.50
6 inch, with ground and graduated vial.....	3.50
8 inch, with ground and graduated vial.....	4.00
12 inch, with ground and graduated vial, with plumb.....	5.50
18 inch, with ground and graduated vial, with double plumb.....	8.00

Either size, nickel base, 25 cents extra.

The bottoms of these levels are all ground true.

MEASURING BAR CLAMPS

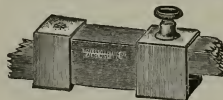


Fig. 69

These clamps are one inch square inside, and are to be used with two wooden bars about 1x½ inch of any desired length. The clamps and bars thus combined will be found very convenient by carpenters as adjustable measuring rods, as well as for extension beams for the No. 59 Trammels. Nickel plated.

Price, per pair.....\$0.75

ELECTRICIANS' POCKET SCREWDRIVER

The handle of this screwdriver is covered with hard rubber for insulation from electrical currents, and is nicely ribbed so as to insure a firm grip when using the tool.

Price, complete.....\$1.50

Extra Blades.....each .10



Fig. 560

AUTOMATIC ADJUSTABLE-STROKE CENTER PUNCH



Fig. 18

The ordinary hammer and center punch are not sufficiently accurate when laying out fine work. They require the use of both hands and the accuracy of the blow depends upon the skill of the mechanic.

The center punch shown here (patent applied for) contains a mechanism which automatically strikes a blow of any required force when the punch is in the exact position desired by the operator. It is provided with a knurled adjustable screw cap, which, working in connection with a spring, regulates the stroke. For work requiring a heavy mark, turn cap down; for work requiring a light mark, turn it up. To use it, no hammer is needed. The punch being placed in an upright position over the working line, a downward pressure releases the striking block and makes the impression without danger of slipping, as is liable when a hammer is used. When adjusted for either light or heavy stroke, all indentations are of a uniform size for the starting of the drill, etc., and accurate and quicker work can be done. The working parts are hardened, durable and accessible for such repairs as may ever be needed. The adjustable cap fits the hand, with no stroke adjusting screw through and above it to bother. The point can be removed for regrounding and easily replaced. The AA size is 3¼ inches long when adjusted for medium stroke, ¾ inch diameter and weighs one ounce. The A size is 5 inches long when adjusted for a medium stroke, ¾ inch in diameter and weighs 3 ounces. The B size is 6 inches long when adjusted for a medium stroke, ¾ inch in diameter and weighs 4 ounces. It differs from the other sizes in being larger and capable of striking a much heavier blow.

Prices

No. 18AA.....	\$1.50	No. 18B.....	\$2.50
No. 18A.....	2.00	Extra points.....each	.15

Unless otherwise ordered, size A will be sent.

MACHINISTS' CENTER PUNCHES

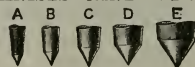


Fig. 117A

Made to supply the demand for a better article than has heretofore been on the market. Made of fine steel, neatly shaped, with both ends tempered and points nicely ground.

Length of each size 4 inches. Diameter, A 5/64 inch, B 3/32 inch, C 9/64 inch, D 5/32 inch.

A larger size, E, is made for heavy work; length 5 inches, diameter ¼ inch, diameter of knurled part ½ inch.

Prices

Per dozen.....	\$2.00
Each.....	.20
Per dozen, assorted A, B and C, in round wooden box.....	2.15
Sent in round box only when so ordered.	

SPACING CENTER PUNCH

Starrett's Combination Prick Punch and Spacing Tool is just the thing for laying out work quickly and accurately—for drilling, cutting out dies, etc. The prick punch is solid—made from best tool steel, properly tempered. The guide point is set in a socket with a spring to press it down. When the punch is struck, the guide presses back into its socket, permitting the punch to be held straight over its work, and insuring accurate results. The screw with check nuts sets the spacer right for small or large drill, and has a variation from 5/64 inch to ¼ inch.

Price.....\$0.75

PATENT NAIL HOLDER AND SET

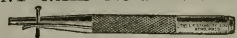


Fig. 119

This cut shows our Nail Holder and Set combined. The nail may be instantly placed under the spring in the lower end of the holder, and there retained by the pressure of same, ready to be driven home. After one blow is struck, the holder is withdrawn and the nail driven in and sunk with the punch—a great improvement over the difficult way of trying to hold a small nail between the thumb and finger at the risk of marring them. The holder also admits of the nail being held to drive in places where the hand cannot go.

Price, each.....\$0.25

Fig. 117

Fig. 118

STARRETT TOOLS

BENCH LEVEL



Fig. 130

3 1/2 inch \$0.40

IRON

BENCH LEVELS WITH DOUBLE PLUMBS



Fig. 132A



Fig. 132B



Fig. 132C

4 inch, with square ends.....	\$1.35
6 inch, with square ends.....	1.50
9 inch, with square ends.....	1.65
12 inch, with square ends.....	1.75
18 inch, as in bottom cut.....	2.00
24 inch, as in bottom cut.....	2.25

ENGINEERS' AND PLUMBERS' LEVEL



Fig. 133

The above represents an adjustable, incline level, a fixed level, and a plumb. The hinged tube inside the working faces of the frame, carrying a level glass, is adjustable to the graduated scale, and shows any incline by 32ds (or less) to 2 inches to the foot without interfering in the least with the plumb or level.

A longitudinal groove in seat of frame (not shown in cut) adapts it to rest on a cylindrical shaft or pipe as well as on flat surfaces, making it convenient to determine the pitch of drain pipes, etc.

These instruments are supplied with either ground or plain glasses.

Prices

No. 133A.	10 inch with plain glasses.....	\$2.75
No. 133B.	15 inch with plain glasses.....	3.00
No. 133C.	10 inch with ground glasses.....	5.75
No. 133D.	15 inch with ground glasses.....	6.00

Size A will be sent unless otherwise ordered.

TOOL MAKERS' STEEL CLAMPS

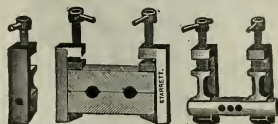


Fig. 160

These clamps are made from drop forgings, nicely finished, case hardened, and have take-up blocks to slip on and off end of screw, and are held to same in a novel manner. They will hold work square and parallel for laying out on surface plates, fitting or drilling. A round piece may be rigidly held in two of the clamps and drilled on an upright, central and parallel. Put up and sold in pairs. With the small block in use, the capacity of the smaller clamp is a little over one inch, and that of the larger clamp two inches. Has hole in block to insert screw, so that block may be fastened to bench, and used as a small vise.

Prices

1 inch.....	per pair	\$2.00
2 inch.....	per pair	2.50

SETS OF TOOLS

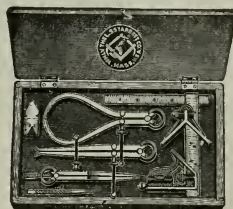


Fig. 901

In nicely finished wooden case. Size of case, 12 inches x 7 inches x 1 1/2 inches.

Set No. 901 consists of the wooden case and the following tools:

No. 11.	6 inch Combination Square, complete.
No. 321.	6 inch Flexible Steel Rule in pocket case.
No. 117B.	Center Punch.
No. 390.	Center Gage.
No. 77.	5 inch Divider with solid nut.
No. 79.	6 inch Outside Caliper with solid nut.
No. 73.	6 inch Inside Caliper with solid nut.

Price

Set, complete.....	\$6.15
--------------------	--------

FIRM DOUBLE JOINT CALIPERS FOR BLACKSMITHS

These callipers are well made, have perfect joints and a long handle to work with comfort hot forgings—the long arm to be used for the greater and the short



Fig. 173

one for the smaller or finished size. The difference in the length of arms prevents using the wrong caliper when there is but slight variation in the work measured. The caliper is 22 inches in length over all and has a 6-inch caliper on one side and a 12-inch caliper on the other side.

Price

Each	\$2.00
------------	--------

STARRETT TOOLS

LEVELING INSTRUMENT



Fig. 101

Designed for the use of architects, contractors, carpenters, millwrights, masons, surveyors, etc.

Its lightness, simple construction, and extremely moderate price, combined with the wide range of work to which it can be applied, make it very desirable for all who have occasion to use such an instrument.

The tripod is of iron, and has improved extension legs. The upper parts are hollow, to receive within them the lower parts, which may be held at any desired length by clamp screws.

The upper plate is connected to the tripod head by a ball and socket joint, and can be leveled by the leveling screws. This plate is recessed to contain a graduated arc below its upper surface, and has a center stud on which the arc and level turn. The graduated arc is of steel, and has on it one half of a circumference divided to degrees and properly numbered. This arc turns on the center stud of the upper plate, independent of the level or sight tube.

The sight tube is a brass tube twelve inches long, and in one end is a small eye aperture, while the other end has the usual cross wires.

With extension legs, the height can be from two feet six inches to four feet six inches. The sight tube, level case, and graduated arcs are nickel plated, the other parts are japanned.

The advantages of this instrument are as follows: The head is held to the tripod by a bolt and nut, so as to make it stationary at any given point; the graduated arc can be clamped to the base plate by throwing a small cam arrangement.

Weight packed in box for shipment, 13½ pounds.

Prices

- No. 101A. Japanned, nickeled tube.....\$12.50
No. 101B. Japanned, nickeled tube with ground vial in level..... 14.00

No. 101A will be sent when style is not specified.

A special circular of this instrument will be sent on request.

ELECTRICIAN'S LEVEL

Un-Magnetic

This level is especially designed for use about electrical works, setting up electrical engines, dynamos, etc., or in any place where an iron or steel level is liable to be magnetized.

The base is made of bronze, is un-magnetic and has concave groove in the bottom, running through the center full length, adapting it to rest on a shaft or pipe as well as on a flat surface.



Fig. 107

Prices

- 8 inch, with plain vial.....\$2.50
12 inch, with plain vial..... 3.50
16 inch, with plain vial..... 4.50
In fancy wooden case, extra..... 1.00

TRANSIT

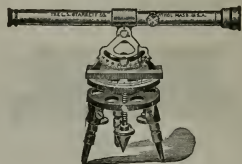


Fig. 99

To meet the demands of contractors, builders, carpenters, farmers, and others for a transit and level, low in price yet sufficiently accurate for their needs, we offer the Starrett transit and level. These instruments are very simple; they do not have the expensive attachments found on engineers' instruments. The builder and contractor find them indispensable in laying out building lots, locating batter boards, leveling foundation walls, and in pouring concrete floors.

Prices

- No. 99A. With plain sight tube and short legs.....\$15.00
No. 99B. With plain sight tube and long legs..... 16.50
No. 99C. With plain sight tube and short legs and ground level vial..... 16.50
No. 99D. With plain sight tube and long legs and ground level vial..... 18.00
No. 99E. With telescope, short legs and ground level vial..... 26.50
No. 99F. With telescope, short legs, and ground level vial..... 28.00
Target to go on common ten-foot pole, extra 1.50
No. 99F will be sent when style is not specified.
A special circular of this instrument will be sent on request.

PIN VISES



These vises have hardened jaws with chucks so made that they will hold firmly anything inserted in them. The hole extends through full length of the handle. The handle is reduced in size, so that it may be more rapidly rotated between thumb and finger when filing small work. They are convenient handles for holding scribers, small files, etc. Nickel plated.

Prices

- No. 162A. Capacity, .0 inch to .040 inch.....\$0.55
No. 162B. Capacity, .030 inch to .062 inch..... .55
No. 162C. Capacity, .050 inch to .125 inch..... .55
No. 162D. Capacity, .115 inch to .187 inch..... .75
Set complete (one of each size)..... 2.40

Fig. 162

DRAFTSMEN'S SCALES, PATENTED

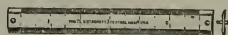


Fig. 405

This scale has tilting studs, so placed that each of its four corners, with different graduations, will come in contact with the paper by its own weight when resting on the studs, with the back edge raised at an angle of about 30°. The scales are graduated on each of their four corners in parts of inches as follows:

- No. 405. 10ths, 40ths, 50ths, 100ths.
No. 405A. 8ths, 16ths, 32ds, 64ths.

Prices

- 6 inch.....\$1.00
12 inch..... 1.50

STARRETT TOOLS

TIME SAVER DRILL, TAP, AND STEEL WIRE GAUGE

By use of this gauge, one is enabled to select at once the right sized drill to suit machine screw tap most commonly used, leaving just stock enough for the tap to cut as near a full thread as is practicable for one tap without breaking it, thus saving much time and uncertainty of result attending the former crude ways of making a selection.

Explaining the chart, the first row of figures, for an example, read thus, 14x20 10 1/4. The number 14 (in the first row of figures) means the number or size of tap; 20 the pitch or size of thread; 10 the size of drill to use which will leave the right stock for proper thread; and 1/4, size of drill to use to let this tap or screw through outside of the thread.

The figures—1, etc., up to 60—designate the number of drill (size agreeing with the holes). Other figures, 228, 221, etc., designate the size of hole in thousandths of an inch.

Price\$1.75

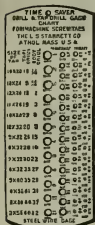


Fig. 185

DRILL AND STEEL WIRE GAUGE

This gauge gives the number of drill to fit each hole, and the size of the hole in thousandths of an inch.

Price, No. 186.....\$1.50

JOBBER'S DRILL GAUGE

For Gauging Twist Drills

This gauge shows sizes from 1/16 inch to 1/2 inch, varying by 64ths. Each size is designated by both common and decimal fractions. The gauge is hardened and tempered and the holes standard.

Price, No. 187.....\$2.25

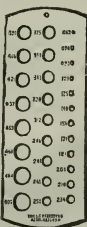


Fig. 187

POCKET MAGNIFYING GLASSES



Fig. 7150 Fig. 7152

Mounted in Rubber

No. 7150. 1 lens, 1 inch diameter.....each \$0.35
No. 7151. 1 lens, 1 1/2 inch diameter..... " .55
No. 7152. 2 lens, 1 inch diameter..... " .60
No. 7153. 2 lens, 1 1/2 inch diameter..... " 1.00

TWIST DRILL AND STEEL WIRE GAUGE



Fig. 286

This gauge gives the number of drill to fit each hole. It can also be used in measuring fine drill rods. Each gauge is tested after hardening. Size of gauge, 2 inches long, 3/4 inch wide and 1/8 inch thick. It takes in sizes from 61 to 80 inclusive.

Price\$2.00

STEEL MUSIC WIRE GAUGE

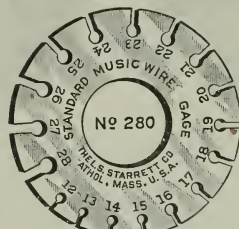


Fig. 280

Cut full size.
Washburn & Moen standard.

Each gauge carefully tested after hardening.

Price

No. 280. Takes
in No. 12 to
No. 28.....\$1.50

SIZES OF THE NUMBERS OF STEEL MUSIC WIRE GAUGE

No. of Gauge	Size of each No. in decimal parts of an inch	No. of Gauge	Size of each No. in decimal parts of an inch
8-0	.0083	12	.0296
7-0	.0087	13	.0314
6-0	.0095	14	.0326
5-0	.010	15	.0345
4-0	.011	16	.036
3-0	.012	17	.0377
2-0	.0133	18	.0395
1-0	.0144	19	.0414
1	.0156	20	.0434
2	.0166	21	.046
3	.0178	22	.0483
4	.0188	23	.051
5	.0202	24	.055
6	.0215	25	.0586
7	.023	26	.0626
8	.0243	27	.0658
9	.0256	28	.072
10	.027	29	.076
11	.0284	30	.080

AMERICAN STANDARD WIRE GAUGES

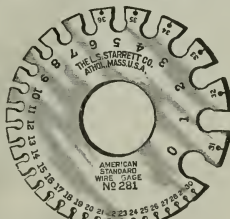


Fig. 281

Each gauge is tested after hardening and warranted accurate.

The decimal equivalents of each number are stamped on the back.

Price

No. 281. Takes in No. 0 to No. 36.....\$2.50

BUILDERS', ARCHITECTS' AND
SURVEYORS' INSTRUMENTS

Fig. 5160

Engineers' R. R. Transit

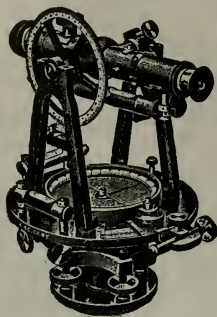


Fig. 5129

Builders' Transit



Fig. 5110

Builders' or Architects' Level

No. 5160, Engineers' Railroad Transit (for repeating angles) achromatic terrestrial telescope 11½ inch, with dust cap and sun shade, fine spirit level to telescope, graduated on the glass. Object glass 1½ inch with improved rack movement, eyepiece with patent micrometer focusing arrangement with lock nut. Clamp and tangent screw of improved pattern with counter-spring. Compass with silvered raised ring, graduated to half-degree, with variation plate set by capstan-head pinion. Needle about 5 inch. Vertical limb 5 inch diameter, graduated on solid silver to half-degrees with vernier reading to one minute. Horizontal limb 6½ inch graduated on solid silver to half-degrees reading to one minute by two opposite verniers placed at about 30° with telescope. Two spirit levels to horizontal leveling arms adjustable for wear. Shifting centre.

Instrument complete, with plumb bob, reading glass, adjusting pins, waterproof cover, etc., packed in polished mahogany box with split tripod..... \$175.00

BUILDERS' TRANSIT WITH COMPASS

No. 5129, Builders' Transit with vertical limb, 3½ inch diameter, graduated to degrees, reading to five minutes. Instrument complete, with tripod, etc..... \$110.00
Vertical Limb reading to one minute, extra..... 5.00
Patent Extension Tripod in place of regular tripod, extra..... 6.00

BUILDERS' OR ARCHITECTS' Y LEVEL

Builders' or Architects' Y Level, achromatic terrestrial telescope 11 inch with dust shade and cross-hairs, spirit level graduated on the glass, object-glass 1½ inch with rack-movement, eyepiece adjustable to focus the cross-hairs. The Y's have patent locking arrangement dispensing with the pin bolts. Horizontal circle 3 inch graduated to degrees, with vernier reading to 5 minutes. A most serviceable and compact instrument.

No. 5110, Builders' or Architects' Y Level, complete, with metal trivet, plumb bob and adjusting pins, in polished mahogany box with hardwood tripod..... \$45.00
No. 5111, Builders' or Architects' Y Level, like No. 5110, but with improved tangent screw with counter-spring..... 50.00

MEASURING CHAINS

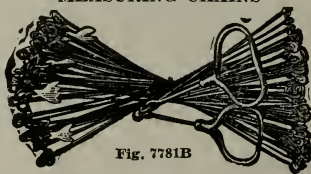


Fig. 7781B

STEEL, U. S. STANDARD

7780A.	Steel, W. G. 12, brass handles, oval rings, 100 feet.....	each	\$4.50
7780B.	Steel, W. G. 12, brass handles, oval rings, 100 feet.....	each	8.00
7780C.	Steel, W. G. 12, brass handles, oval rings, 33 feet (50 links).....	each	3.50
7780D.	Steel, W. G. 12, brass handles, oval rings, 66 feet (100 links).....	each	6.50
7781A.	Steel, W. G. 12, brass handles, brazed links and rings, 60 feet.....	each	6.00
7781B.	Steel, W. G. 12, brass handles, brazed links and rings, 100 feet.....	each	11.00
7781C.	Steel, W. G. 12, brass handles, brazed links and rings, 33 feet (50 links).....	each	5.50
7781D.	Steel, W. G. 12, brass handles, brazed links and rings, 66 feet (100 links).....	each	10.00

Chain 7781B has a spring-hook (snap) at 50 feet, so that it can be separated there and the handle attached for using it as a 50 foot chain.

IRON, U. S. STANDARD

7786A.	Iron, W. G. 8, brass handles, 2 round rings, 50 feet.....	each	\$2.50
7786B.	Iron, W. G. 8, brass handles, 2 round rings, 100 feet.....	each	3.50
7786C.	Iron, W. G. 8, brass handles, 2 round rings, 33 feet (50 links).....	each	2.00
7786D.	Iron, W. G. 8, brass handles, 2 round rings, 66 feet (100 links).....	each	3.20
7787A.	Iron, W. G. 8, brass handles, 3 sawed oval rings, 50 feet.....	each	3.50
7787B.	Iron, W. G. 8, brass handles, 3 sawed oval rings, 100 feet.....	each	5.50
7787C.	Iron, W. G. 8, brass handles, 3 sawed oval rings, 33 feet (50 links).....	each	2.70
7787D.	Iron, W. G. 8, brass handles, 3 sawed oval rings, 66 feet (100 links).....	each	4.25

FOR TAPE LINES, RULES AND LEVELS, SEE INDEX



Fig. 6280

LEVELING
RODS

No. 6280. Light-colored hardwood, brass mounted, with target, vernier and clamp, engine-divided to inches and ½ in., 5½ ft. slid-out to 10 ft.

Each\$6.00

No. 6281. Like No. 6280, but divided 10ths and 100ths ft.

Each\$6.00

ARMSTRONG'S TOOLS AND TOOL HOLDERS

ARMSTRONG CUTTING-OFF TOOLS

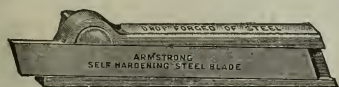


Fig. 518A. Straight Cut-Off Tool



LEFT HAND CUT-OFF TOOL

RIGHT HAND CUT-OFF TOOL

Fig. 518B. Left Hand Cut-Off Tool
Blades have clearance both sides.

Fig. 518C. Right Hand Cut-Off Tool.
All sizes straight and off-set.

Price Includes One Self Hardened Steel Blade and Drop Forged Wrench

No. Left Hand Off-Set	No. Straight Shank	No. Right Hand Off-Set	Size of Shank inches	Size of Blades inches	Complete each	Extra Blades each
30-L	20	30-R	$\frac{3}{8}$ x $\frac{7}{8}$	$\frac{3}{8}$ x $\frac{5}{8}$	\$1.90	\$0.60
31-L	21	31-R	$\frac{1}{2}$ x $1\frac{1}{8}$	$\frac{1}{2}$ x $\frac{3}{4}$	2.15	.85
32-L	22	32-R	$\frac{5}{8}$ x $1\frac{1}{8}$	$\frac{1}{2}$ x $\frac{7}{8}$	2.75	1.80
33-L	23	33-R	$\frac{3}{4}$ x $1\frac{1}{8}$	$\frac{5}{8}$ x 1	3.60	2.15
34-L	24	34-R	$\frac{7}{8}$ x $1\frac{1}{8}$	$\frac{1}{2}$ x $1\frac{1}{8}$	4.50	2.75
35-L	25	35-R	1 x 2	$\frac{1}{2}$ x $1\frac{1}{8}$	5.75	4.00
36-L	26	36-R	$1\frac{1}{8}$ x $2\frac{1}{8}$	$\frac{3}{4}$ x $1\frac{3}{8}$	7.75	4.65

STRAIGHT AND OFFSET HOLDERS

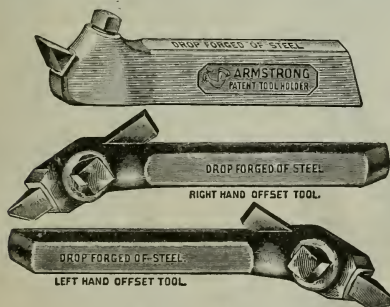


Fig. 518F. Offset Tool

Price Includes One Drop Forged Wrench and Two Self-Hardening Steel Cutters

No. Straight Shank	No. Left Hand	No. Right Hand	Size of Holder inches	Size of Cutter in. sq.	Complete	Extra Cutters each
00-S	00-L	00-R	$\frac{1}{2}$ x $\frac{5}{8}$ x $4\frac{1}{2}$	$\frac{1}{2}$	\$1.80	\$0.25
0-S	0-L	0-R	$\frac{3}{8}$ x $\frac{3}{4}$ x 5	$\frac{1}{2}$	1.90	.30
1-S	1-L	1-R	$\frac{1}{2}$ x 1 x 6	$\frac{1}{2}$	2.15	.45
2-S	2-L	2-R	$\frac{5}{8}$ x $1\frac{1}{4}$ x 7	$\frac{1}{2}$	2.70	.65
3-S	3-L	3-R	$\frac{3}{4}$ x $1\frac{1}{2}$ x 8	$\frac{1}{2}$	3.60	1.00
4-S	4-L	4-R	$\frac{7}{8}$ x $1\frac{1}{2}$ x 9	$\frac{1}{2}$	4.60	1.45
5-S	5-L	5-R	1 x $1\frac{1}{4}$ x 11	$\frac{1}{2}$	5.75	2.50
6-S	6-L	6-R	$1\frac{1}{4}$ x 2 x 13	$\frac{1}{2}$	8.75	4.10
7-S	7-L	7-R	$1\frac{1}{2}$ x $2\frac{1}{4}$ x 16	$\frac{1}{2}$	15.00	6.30
750-S	750-L	750-R	$1\frac{1}{2}$ x $2\frac{1}{2}$ x 18	1	22.00	8.60
800-S	800-L	800-R	$1\frac{1}{2}$ x $2\frac{3}{4}$ x 20	1 $\frac{1}{4}$	28.50	11.90

ARMSTRONG SIDE TOOLS

Off-Set Shank



Fig. 518D. Right Hand Off-Set Tool for Working Close Up Toward the Chuck



Fig. 518E. Left Hand Off-Set Tool for Working Toward Tail Stock of Lathe

Price Includes One Self-Hardened Steel Blade and Drop Forged Wrench

No. Left Hand	No. Right Hand	Size of Shank inches	Size of Cutter inches	Complete each	Extra Cutters each
70-L	70-R	$\frac{3}{8}$ x $\frac{7}{8}$	$\frac{1}{2}$ x $\frac{5}{8}$ x $4\frac{1}{2}$	\$2.65	\$0.60
71-L	71-R	$\frac{1}{2}$ x $1\frac{1}{8}$	$\frac{1}{4}$ x $\frac{3}{4}$ x 5	3.00	.95
72-L	72-R	$\frac{5}{8}$ x $1\frac{1}{8}$	$\frac{1}{8}$ x 1 x 6	3.75	1.60
73-L	73-R	$\frac{3}{4}$ x $1\frac{1}{8}$	$\frac{3}{8}$ x $1\frac{1}{4}$ x 7	5.00	2.40
74-L	74-R	$\frac{7}{8}$ x $1\frac{1}{8}$	$\frac{1}{8}$ x $1\frac{1}{4}$ x 8	6.25	3.60
75-L	75-R	1 x 2	$\frac{1}{2}$ x $1\frac{1}{2}$ x 9	8.25	5.00
76-L	76-R	$1\frac{1}{4}$ x $2\frac{1}{2}$	$\frac{1}{8}$ x $1\frac{1}{2}$ x 10	11.00	7.75

DROP HEAD TOOL HOLDERS



Fig. 519E

Head and screw are extra heavy, and the cutter point while retaining the correct cutting angle, is dropped to a position suitable for use on lathes with high slide rest or low centers, while its "Goose Neck" shape makes it exceptionally efficient when used on the planer.

Price Includes Two Self-Hardening Steel Cutters and Drop Forged Wrench

No.	Size of Holder inches	Size of Cutter inches	Height from Bottom of Shank to Cutter Point inches	Complete	Extra Cutters Each
100	$\frac{1}{2}$ x $1\frac{1}{2}$ x 6	$\frac{1}{2}$	$\frac{1}{2}$	\$1.90	\$0.25
101	$\frac{5}{8}$ x $\frac{7}{8}$ x $7\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{4}$	2.25	.30
102	$\frac{7}{8}$ x $1\frac{1}{8}$ x $9\frac{1}{2}$	$\frac{3}{8}$	1	3.65	.65
103	$1\frac{1}{2}$ x $1\frac{1}{2}$ x $11\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{4}$	5.80	1.45
104	$1\frac{1}{2}$ x $1\frac{1}{2}$ x $14\frac{1}{2}$	$\frac{5}{8}$	$1\frac{1}{2}$	8.00	2.50
105	$1\frac{1}{2}$ x $1\frac{1}{2}$ x $17\frac{1}{2}$	$\frac{3}{4}$	1 $\frac{1}{2}$	13.80	4.10

CLAMPS, PLANER AND BORING TOOLS

MACHINISTS' EXTRA HEAVY STEEL CLAMP

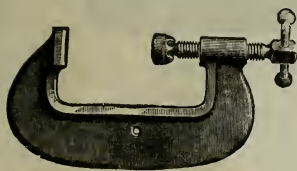


Fig. 509A

WILL STAND THE SEVEREST TEST

Extra heavy, with button on end of screw, hung on a ball so as to accommodate itself to irregularities without bending the screw. The foot of the clamp is planed.

No.	Opening to inches	Each	No.	Opening to inches	Each
1	2	\$1.15	5	6	\$2.75
2	3	2.00	6	8	3.25
3	4	2.25	7	10	3.75
4	5	2.50	8	12	4.25

DROP-FORGED STEEL C CLAMP

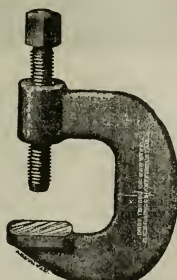


Fig. 509B

No.	Opens inches	Each	Screws each
10	1 1/4	\$0.75	\$0.08
11	1 1/2	1.25	.10
12	2 1/4	1.75	.15
13	3 1/4	2.50	.22
14	4 1/2	3.25	.30
15	5 1/2	4.00	.35
16	6 1/2	5.00	.45
18	8 1/2	7.00	.60

MALLEABLE IRON, SQUARE THREAD, RIBBED FRAME CLAMP

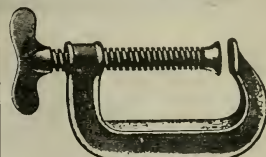


Fig. 509C. Standard

Opening inches Wide	Per dozen
2	\$3.00
2 1/2	3.00
3	3.50
4	4.50
5	5.50
6	7.00
7	8.50
8	11.00
10	15.00
12	17.00

GANG PLANNER TOOL

As each chip is comparatively light, a planer will, with this tool, carry with ease a feed and depth of cut much greater than is possible when using an ordinary tool, and there is much less tendency to "break out" at the end of cut. On large surfaces, this tool has reduced time 50 to 75 per cent.

The illustration shows plan of cut made by Gang Planer Tool with feed set to 1/4 inch, distributing the cut so that each cutter takes but 1/8 inch.

Price includes one set of self-hardening steel cutters, gauge for grinding cutters, and wrench.

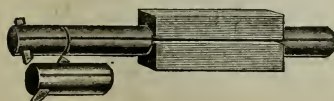


Fig. 519A



Fig. 519B

No.	Size Shank inches	Size Cutter inches	Feed Adjustment inches	Complete	Extra Cutters each
61	1 1/4 x 1 3/4 x 7 1/2	3/8 x 1/2	0 to 1/4	\$13.00	\$0.85
62	1 1/2 x 2 1/4 x 9	1/2 x 1 1/2	0 to 3/8	22.00	1.70
63	2 x 2 1/2 x 11	5/8 x 1 1/2	0 to 1/2	38.50	2.80



BORING TOOL

Adapted to use in large lathes with clamp tool rest.

Price includes straight and 45° end caps, two cutters and wrench.

No.	Size Shank inches	Diam. Bar inches	Size Cutter in. sq.	Complete	Extra Cutters each
15	1 1/2 x 2 1/4	1 1/2	1 1/2	\$2.75	\$0.30
16	1 3/4 x 2 3/4	1 3/4	1 3/4	3.50	.45
17	2 x 2 3/4	1 3/4	2	4.50	.65

PLANER TOOL



Fig. 519C

Pat. May 28, 1901.

Works at Any Angle, Right or Left Hand. Equals a Complete Set of Forged Planer Tools

Price includes a drop forged wrench and two self-hardening steel cutters.

No.	Size Shank inches	Length inches	Size Cutter inches	Complete	Extra Cutters each
40	1 1/2 x 1	6	1/2 x 3/8	\$3.10	\$0.45
401	5/8 x 1 1/4	8	1/2 x 1/2	4.00	.65
41	3/4 x 1 1/2	10	3/4 x 1/2	5.25	.95
42	1 1/8 x 1 3/4	13	1/2 x 3/4	8.25	2.15
43	1 1/2 x 2	16	3/4 x 3/8	12.75	3.60
44	1 3/4 x 2 1/4	18	3/4 x 1	19.50	5.30
45	2 x 2 3/4	20	3/4 x 1 1/4	30.00	8.50

BORING TOOL



Fig. 519D

This is a stiff, handy tool and can be used on any lathe without fitting. Effectively equal to a dozen forged tools.

Price includes straight and 45° end caps, two cutters and wrench.

No.	Size Shank inches	Flam. Bar inches	Size Cutter in. sq.	Complete	Extra Cutters each
00B	1/2 x 5/8	1/2	3/8	\$3.25	\$0.25
8	3/4 x 5/8	3/4	1/2	3.25	.25
9	1/2 x 1	1/2	3/4	3.85	.30
10	5/8 x 1 1/4	5/8	1	5.10	.45
11	3/4 x 1 1/2	3/4	1 1/4	7.25	.65
12	1 x 1 1/2	1	1 1/2	10.75	.90
13	1 1/4 x 1 3/4	1 1/4	2	15.00	1.20

TAPER SHANK TWIST DRILLS



No. 1 TAPER SHANK

Diameter inches	Price, each		Length Over All inches
	Carbon Steel	High Speed	
1/16	\$0.45	\$0.90	4 3/4
3/32	.45	.90	4 1/2
1/8	.45	.90	4 1/2
5/32	.45	.90	4 1/2
3/16	.45	.90	4 1/2
7/32	.45	.90	4 1/2
1/4	.45	.90	5 1/8
9/32	.45	.90	5 1/8
5/16	.45	.90	5 1/8
11/32	.50	.90	5 1/8
3/8	.50	.90	5 1/8
13/32	.55	1.00	5 1/8
7/16	.55	1.00	5 1/8
15/32	.60	1.10	6 1/8
1/2	.60	1.10	6 1/8
17/32	.65	1.20	6 1/8
3/4	.65	1.20	6 1/8
19/32	.70	1.30	6 1/8
5/8	.70	1.30	6 1/8
21/32	.75	1.40	6 1/2
3/4	.75	1.40	6 1/2
23/32	.80	1.50	6 3/4
7/8	.80	1.50	6 3/4
25/32	.90	1.65	7
1	.90	1.65	7
27/32	1.00	1.75	7 1/4
1 1/8	1.00	1.75	7 1/4
29/32	1.10	1.90	7 1/2
1 1/4	1.10	1.90	7 1/2
31/32	1.20	2.00	7 3/4
1 1/2	1.20	2.00	7 3/4
33/32	1.30	2.15	8
1 3/4	1.30	2.15	8
35/32	1.40	2.25	8 1/4
2	1.40	2.25	8 1/4

No. 2 TAPER SHANK

37/64	\$1.50	\$2.40	8 1/2
1 1/8	1.50	2.40	8 1/2
39/64	1.60	2.50	8 3/4
1 1/4	1.60	2.50	8 3/4
41/64	1.70	2.75	9
1 1/2	1.70	2.75	9
43/64	1.80	3.00	9 1/4
1 3/4	1.80	3.00	9 1/4
45/64	1.90	3.25	9 1/2
2	1.90	3.25	9 1/2
47/64	2.00	3.50	9 3/4
2 1/8	2.00	3.50	9 3/4
49/64	2.10	3.75	9 3/4
2 1/4	2.10	3.75	9 3/4
51/64	2.20	4.00	10
2 1/2	2.20	4.00	10
53/64	2.40	4.40	10 1/4
2 3/4	2.40	4.40	10 1/4
55/64	2.60	4.75	10 1/2
3	2.60	4.75	10 1/2
57/64	2.80	5.15	10 3/4
3 1/8	2.80	5.15	10 3/4

No. 3 TAPER SHANK

59/64	\$3.00	\$5.50	10 3/4
1 3/8	3.00	5.50	10 3/4
61/64	3.25	5.90	10 3/4
1 1/2	3.25	5.90	10 3/4
63/64	3.50	6.25	11
1 5/8	3.50	6.25	11
1 1/4	3.75	6.75	11 1/4
1 3/4	4.00	7.25	11 1/4
1 7/8	4.00	7.25	11 1/4
1 5/8	4.25	7.75	11 1/2
1 7/8	4.25	7.75	11 1/2
1 5/8	4.50	8.25	11 3/4

No. 3 TAPER SHANK—Cont'd

Diameter inches	Price, each		Length Over All inches
	Carbon Steel	High Speed	
1 1/8	\$4.50	\$5.25	11 3/4
1 3/8	4.75	5.90	11 3/4
1 1/2	4.75	5.90	11 3/4
1 5/8	5.00	9.50	12
1 7/8	5.00	9.50	12
1 5/8	5.25	10.15	12 1/8
1 7/8	5.25	10.15	12 1/8
1 5/8	5.50	10.75	12 1/2
1 7/8	5.50	10.75	12 1/2

No. 4 TAPER SHANK

1 1/2	\$5.75	\$11.50	14 1/8
1 3/4	5.75	11.50	14 1/8
1 5/8	6.00	12.25	14 1/4
1 7/8	6.00	12.25	14 1/4
1 5/8	6.25	13.00	14 3/8
1 7/8	6.25	13.00	14 3/8
1 5/8	6.50	13.75	14 1/2
1 7/8	6.50	13.75	14 1/2
1 5/8	7.00	14.65	14 3/4
1 7/8	7.00	14.65	14 3/4
1 5/8	7.50	15.50	14 3/4
1 7/8	7.50	15.50	14 3/4
1 5/8	8.00	16.40	14 7/8
1 7/8	8.00	16.40	14 7/8
1 5/8	8.50	17.25	15
1 7/8	8.50	17.25	15
1 5/8	9.00	18.15	15 1/8
1 7/8	9.00	18.15	15 1/8
1 5/8	9.50	19.00	15 1/4
1 7/8	9.50	19.00	15 1/4
1 5/8	10.00	20.00	15 3/8
1 7/8	10.00	20.00	15 3/8
1 5/8	10.50	21.00	15 1/2
1 7/8	10.50	21.00	15 1/2
1 5/8	11.00	22.00	15 3/4
1 7/8	11.00	22.00	15 3/4
1 5/8	11.50	23.00	15 3/4
1 7/8	11.50	23.00	15 3/4
1 5/8	12.00	24.00	15 7/8
1 7/8	12.00	24.00	15 7/8
1 5/8	12.50	25.00	16
1 7/8	12.50	25.00	16
1 5/8	13.25	26.25	16 1/8
1 7/8	13.25	26.25	16 1/8
1 5/8	14.00	27.50	16 1/4
1 7/8	14.00	27.50	16 1/4
1 5/8	14.75	28.75	16 3/8
1 7/8	14.75	28.75	16 3/8
1 5/8	15.50	30.00	16 1/2
1 7/8	15.50	30.00	16 1/2
1 5/8	16.25	31.25	16 1/2
1 7/8	16.25	31.25	16 1/2
1 5/8	17.00	32.50	16 1/2
1 7/8	17.00	32.50	16 1/2
1 5/8	17.75	33.75	16 3/4
1 7/8	17.75	33.75	16 3/4
1 5/8	18.50	35.00	16 3/4
1 7/8	18.50	35.00	16 3/4

No. 5 TAPER SHANK

2 1/4	\$19.25	\$36.25	16 1/2
2 3/8	19.25	36.25	16 1/2
2 1/2	20.00	37.50	17
2 3/4	20.00	37.50	17
2 1/2	20.75	38.75	17 1/8
2 3/4	20.75	38.75	17 1/8
2 1/2	21.50	40.00	17
2 3/4	21.50	40.00	17
2 1/2	22.25	41.25	17 1/4
2 3/4	22.25	41.25	17 1/4

No. 5 TAPER SHANK—Cont'd

Diameter inches	Price, each		Length Over All inches
	Carbon Steel	High Speed	
2 1/4	\$23.00	\$42.50	17
2 3/8	23.00	42.50	17
2 1/2	23.75	43.75	17 1/2
2 3/4	23.75	43.75	17 1/2
2 1/2	24.50	45.00	17 1/2
2 3/4	24.50	45.00	17 1/2
2 1/2	25.25	47.50	17 1/2
2 3/4	25.25	47.50	17 1/2
2 1/2	26.00	50.00	17 1/2
2 3/4	26.00	50.00	17 1/2
2 1/2	26.75	52.50	18
2 3/4	26.75	52.50	18
2 1/2	27.50	55.00	18
2 3/4	27.50	55.00	18
2 1/2	28.25	57.50	18 1/2
2 3/4	28.25	57.50	18 1/2
2 1/2	29.00	60.00	18 1/2
2 3/4	29.00	60.00	18 1/2
2 1/2	29.75	62.50	19
2 3/4	29.75	62.50	19
2 1/2	30.50	65.00	19
2 3/4	30.50	65.00	19
2 1/2	31.25	67.50	19 1/4
2 3/4	31.25	67.50	19 1/4
2 1/2	32.00	70.00	19 1/4
2 3/4	32.00	70.00	19 1/4
2 1/2	33.00	72.50	19 1/2
2 3/4	33.00	72.50	19 1/2
2 1/2	34.00	75.00	19 1/2
2 3/4	34.00	75.00	19 1/2
2 1/2	35.00	77.50	20
2 3/4	35.00	77.50	20
2 1/2	36.00	80.00	20
2 3/4	36.00	80.00	20
2 1/2	37.00	82.50	20 1/2
2 3/4	37.00	82.50	20 1/2
2 1/2	38.00	85.00	20 1/2
2 3/4	38.00	85.00	20 1/2
2 1/2	39.25	87.50	20 1/2
2 3/4	39.25	87.50	20 1/2
2 1/2	40.50	90.00	20 1/2
2 3/4	40.50	90.00	20 1/2
2 1/2	41.75	92.50	21
2 3/4	41.75	92.50	21
2 1/2	43.00	95.00	21
2 3/4	43.00	95.00	21
2 1/2	44.25	97.50	21
2 3/4	44.25	97.50	21
2 1/2	45.50	100.00	21
2 3/4	45.50	100.00	21
2 1/2	46.75	102.50	22
2 3/4	46.75	102.50	22
2 1/2	48.00	105.00	22
2 3/4	48.00	105.00	22

No. 6 TAPER SHANK

3 1/8	\$52.00	\$112.50	22
3 1/4	56.00	120.00	22
3 3/8	60.00	127.50	22
3 1/2	65.00	135.00	23
3 3/4	70.00	142.50	23
3 1/2	75.00	150.00	23
3 3/8	80.00	157.50	23
3 1/2	85.00	165.00	24
3 3/4	91.00	172.50	24
3 1/2	98.00	180.00	24
3 3/8	105.00	187.50	24
3 1/2	112.00	195.00	24
3 3/4	119.00	202.50	24
3 1/2	126.00	210.00	24
3 3/8	133.00	217.50	24
3 1/2	140.00	225.00	25

STRAIGHT SHANK TWIST DRILLS



Diameter Inches	Price per dozen		Length Over All Inches	Diameter Inches	Price per dozen		Length Over All Inches
	Carbon Steel	Speed High			Carbon Steel	High Speed	
1/32	\$1.50	....	1 1/2	3/32	\$3.80	\$ 9.10	4 1/4
1/16	1.55	....	1 3/4	1/8	4.00	10.50	4 3/8
1/8	1.60	\$5.70	2 1/2	5/16	4.35	10.50	4 1/2
3/16	1.65	5.70	2 5/8	3/8	4.70	12.00	4 5/8
1/4	1.70	5.70	2 3/4	7/16	5.05	12.00	4 3/4
5/16	1.75	5.90	2 7/8	1/2	5.50	13.50	4 7/8
3/8	1.80	5.90	3	5/8	6.00	13.50	5
7/16	1.85	6.10	3 1/8	3/4	6.50	15.00	5 1/8
1/2	1.90	6.10	3 1/4	7/8	7.00	15.00	5 1/4
5/8	2.00	6.30	3 3/8	1	7.75	17.00	5 3/8
3/4	2.25	6.30	3 1/2	1 1/8	8.50	17.00	5 1/2
7/8	2.50	7.00	3 5/8	1 1/4	9.25	18.75	5 5/8
1	2.75	7.00	3 3/4	1 1/2	10.00	18.75	5 3/4
1 1/8	3.00	7.35	3 7/8	1 3/4	11.00	20.00	5 7/8
1 1/4	3.25	7.35	4	1 7/8	12.00	20.00	6
1 1/2	3.50	9.10	4 1/8				



STRAIGHT SHANK TWIST DRILLS, WIRE GAUGE

Wire Gauge No.	Price per dozen		Decim- al Diam- eter Inches	Length Over All Inches	Wire Gauge No.	Price per dozen		Decim- al Diam- eter Inches	Length Over All Inches
	Carbon Steel	High Speed				Carbon Steel	High Speed		
1	\$2.75	\$7.00	.2280	4	31	\$1.75	\$5.90	.1200	2 3/4
2	2.75	7.00	.2210	3 1/8	32	1.75	5.90	.1160	2 1/8
3	2.75	7.00	.2130	3 1/8	33	1.75	5.90	.1130	2 1/8
4	2.75	7.00	.2090	3 7/8	34	1.75	5.90	.1110	2 5/8
5	2.75	7.00	.2055	3 1/8	35	1.75	5.90	.1100	2 5/8
6	2.50	7.00	.2040	3 1/8	36	1.75	5.90	.1065	2 5/8
7	2.50	7.00	.2010	3 3/4	37	1.75	5.90	.1040	2 1/2
8	2.50	7.00	.1990	3 1/8	38	1.75	5.90	.1015	2 1/8
9	2.50	7.00	.1960	3 1/8	39	1.75	5.90	.0995	2 1/8
10	2.50	7.00	.1935	3 5/8	40	1.75	5.90	.0980	2 3/8
11	2.25	6.30	.1910	3 1/8	41	1.70	5.70	.0960	2 1/8
12	2.25	6.30	.1890	3 5/8	42	1.70	5.70	.0935	2 1/8
13	2.25	6.30	.1850	3 1/2	43	1.70	5.70	.0890	2 1/4
14	2.25	6.30	.1820	3 1/8	44	1.70	5.70	.0860	2 1/8
15	2.25	6.30	.1800	3 1/8	45	1.70	5.70	.0820	2 1/8
16	2.00	6.30	.1770	3 5/8	46	1.65	5.70	.0810	2 1/8
17	2.00	6.30	.1730	3 1/8	47	1.65	5.70	.0785	2 1/8
18	2.00	6.30	.1695	3 1/8	48	1.65	5.70	.0760	2 1/8
19	2.00	6.30	.1660	3 1/4	49	1.65	5.70	.0730	2
20	2.00	6.30	.1610	3 1/8	50	1.65	5.70	.0700	1 1/8
21	1.90	6.10	.1590	3 1/8	51	1.60	5.70	.0670	1 1/8
22	1.90	6.10	.1570	3 1/8	52	1.60	5.70	.0635	1 7/8
23	1.90	6.10	.1540	3 1/8	53	1.60	5.70	.0595	1 1/8
24	1.90	6.10	.1520	3 1/8	54	1.60	5.70	.0550	1 1/8
25	1.90	6.10	.1495	3	55	1.60	5.70	.0520	1 3/4
26	1.80	6.10	.1470	2 1/8	56	1.55	5.70	.0465	1 1/8
27	1.80	6.10	.1440	2 1/8	57	1.55	5.70	.0430	1 1/8
28	1.80	6.10	.1405	2 7/8	58	1.55	5.70	.0420	1 5/8
29	1.80	6.10	.1360	2 1/8	59	1.55	5.70	.0410	1 5/8
30	1.80	6.10	.1285	2 1/8	60	1.55	5.70	.0400	1 1/8

GROOVED SHANK TWIST DRILLS



Carbon Steel, Fig. No. 90. High Speed Steel, Fig. No. 200
ALWAYS GIVE FIG. NUMBER WHEN ORDERING

Fitting No. 1 Chuck				Fitting No. 2 Chuck			
Diameter	Carbon Steel Price each	High Speed Steel Price each	Length Over All inches	Diameter	Carbon Steel Price each	High Speed Steel Price each	Length Over All inches
1/4	\$0.60	\$1.10	6 1/8	1 3/4	\$4.75	\$ 8.90	11 7/8
1/2	.65	1.20	6 1/4	1 3/8	4.75	8.90	11 7/8
3/4	.65	1.20	6 1/4	1 1/2	5.00	9.50	12
1	.70	1.30	6 3/8	1 1/4	5.00	9.50	12
1 1/8	.70	1.30	6 3/8	1 1/8	5.25	10.15	12 1/8
1 1/4	.75	1.40	6 1/2	1 3/8	5.25	10.15	12 1/8
1 1/2	.75	1.40	6 1/2	1 1/2	5.50	10.75	12 1/2
1 3/4	.80	1.50	6 3/4	1 1/4	5.50	10.75	12 1/2
2	.80	1.50	6 3/4	1 1/8	5.75	11.50	12 1/2
2 1/8	.90	1.65	7	1 3/4	5.75	11.50	12 1/2
2 1/4	.90	1.65	7	1 1/2	6.00	12.25	12 1/2
2 1/2	1.00	1.75	7 1/4	1 1/8	6.00	12.25	12 1/2
2 3/4	1.00	1.75	7 1/4	1 1/4	6.25	13.00	12 1/2
3	1.10	1.90	7 1/2	1 3/8	6.25	13.00	12 1/2
3 1/8	1.10	1.90	7 1/2	1 1/2	6.50	13.75	12 1/2
3 1/4	1.20	2.00	7 3/4	1 3/4	6.50	13.75	12 1/2
3 1/2	1.20	2.00	7 3/4	1 1/8	7.00	14.65	12 3/8
3 3/4	1.30	2.15	8	1 1/4	7.00	14.65	12 3/8
4	1.30	2.15	8	1 3/8	7.50	15.50	12 3/8
4 1/8	1.40	2.25	8 1/4	1 1/2	7.50	15.50	13
4 1/4	1.40	2.25	8 1/4	1 3/4	8.00	16.40	13
4 1/2	1.50	2.40	8 1/2	1 1/8	8.00	16.40	13
4 3/4	1.50	2.40	8 1/2	1 1/4	8.50	17.25	13
5	1.60	2.50	8 3/4	1 1/2	8.50	17.25	13 1/2
5 1/8	1.60	2.50	8 3/4	1 3/8	9.00	18.15	13 1/2
5 1/4	1.70	2.75	9	1 1/2	9.00	18.15	13 1/2
5 1/2	1.70	2.75	9	1 3/4	9.50	19.00	13 1/8
5 3/4	1.80	3.00	9 1/4	1 1/8	9.50	19.00	13 1/8
6	1.80	3.00	9 1/4	1 1/4	10.00	20.00	13 1/8
6 1/8	1.90	3.25	9 1/2	1 3/8	10.00	20.00	13 1/8
6 1/4	1.90	3.25	9 1/2	1 1/2	10.50	21.00	13 7/8
6 1/2	2.00	3.50	9 3/4	1 3/4	10.50	21.00	13 7/8
6 3/4	2.00	3.50	9 3/4	1 1/8	11.00	22.00	13 7/8
7	2.10	3.75	9 7/8	1 1/4	11.00	22.00	13 7/8
7 1/8	2.10	3.75	9 7/8	1 3/8	11.50	23.00	14
7 1/4	2.20	4.00	10	1 1/2	11.50	23.00	14
7 1/2	2.20	4.00	10	1 3/4	12.00	24.00	14
7 3/4	2.40	4.40	10 1/4	1 1/8	12.00	24.00	14
8	2.40	4.40	10 1/4	1 1/4	12.50	25.00	14 1/4
8 1/8	2.60	4.75	10 1/2	1 3/8	12.50	25.00	14 1/4
8 1/4	2.60	4.75	10 1/2	1 1/2	13.25	26.25	14 1/4
8 1/2	2.80	5.15	10 5/8	1 3/4	13.25	26.25	14 1/4
8 3/4	2.80	5.15	10 5/8	1 1/8	14.00	27.50	14 7/8
9	3.00	5.50	10 3/4	1 1/4	14.00	27.50	14 7/8
9 1/8	3.00	5.50	10 3/4	1 3/8	14.75	28.75	14 7/8
9 1/4	3.25	5.90	10 7/8	1 1/2	14.75	28.75	14 7/8
9 1/2	3.25	5.90	10 7/8	1 3/4	15.50	30.00	14 5/8
9 3/4	3.50	6.25	11	1 1/8	15.50	30.00	14 5/8
10	3.50	6.25	11	1 1/4	16.25	31.25	14 5/8
10 1/8	3.75	6.75	11 1/8	1 3/8	16.25	31.25	14 5/8
10 1/4	3.75	6.75	11 1/8	1 1/2	17.00	32.50	14 3/4
10 1/2	4.00	7.25	11 3/4	1 3/4	17.00	32.50	14 3/4
10 3/4	4.00	7.25	11 3/4	1 1/8	17.50	33.75	14 3/4
11	4.25	7.75	11 1/2	1 1/4	17.50	33.75	14 3/4
11 1/8	4.25	7.75	11 1/2	1 3/8	18.50	35.00	14 3/4
11 1/4	4.50	8.25	11 3/4	1 1/2	18.50	35.00	15
11 1/2	4.50	8.25	11 3/4	2			

SPECIAL DIAMETERS OR LENGTHS FURNISHED TO ORDER. FOR CHUCKS FOR ABOVE
DRILLS, SEE INDEX
FOR DECIMAL EQUIVALENTS, SEE INDEX

DRILLS FOR BLACKSMITHS' DRILL PRESSES



Fig. 506A

High Speed Drills with $\frac{1}{2}$ inch shanks will be furnished in sizes over $\frac{3}{4}$ inch diameter only at customer's risk, as we do not consider the shanks strong enough.

Unless otherwise specified these drills will always be furnished with flatted shanks.

Shanks $\frac{1}{2}$ Inch Diameter and $2\frac{1}{4}$ Inches Long

Diameter inches	Price each		Length Over All inches
	Carbon Steel	High Speed	
$\frac{1}{8}$	\$0.45	....	4 $\frac{7}{8}$
$\frac{3}{16}$	.45	....	4 $\frac{7}{8}$
$\frac{1}{4}$	.50	....	5 $\frac{5}{8}$
$\frac{5}{16}$	.55	....	5 $\frac{5}{8}$
$\frac{3}{8}$	.60	\$1.10	6
$\frac{7}{16}$	.65	1.20	6
$\frac{1}{2}$	.70	1.30	6
$\frac{9}{16}$	.75	1.40	6
$\frac{5}{8}$	.80	1.45	6
$\frac{11}{16}$	.85	1.55	6
$\frac{3}{4}$	.90	1.60	6
$\frac{13}{16}$	.95	1.70	6
$\frac{7}{8}$	1.00	1.75	6
$\frac{15}{16}$	1.05	1.90	6
1	1.10	2.05	6
$1\frac{1}{16}$	1.20	2.20	6
$1\frac{1}{8}$	1.30	2.30	6
$1\frac{1}{4}$	1.40	2.40	6
$1\frac{1}{2}$	1.50	2.50	6
$1\frac{3}{4}$	1.60	2.65	6
$1\frac{7}{8}$	1.70	2.75	6
2	1.80	2.90	6
$2\frac{1}{8}$	1.90	3.00	6
$2\frac{1}{4}$	2.00	3.15	6
$2\frac{3}{8}$	2.10	3.30	6
$2\frac{1}{2}$	2.20	3.50	6
$2\frac{7}{8}$	2.30	3.70	6
3	2.40	3.90	6
$3\frac{1}{8}$	2.50	4.10	6
$3\frac{1}{4}$	2.60	4.30	6
$3\frac{1}{2}$	2.70	4.50	6
$3\frac{3}{4}$	2.80	4.75	6
4	2.90	5.00	6
$4\frac{1}{8}$	3.00	5.25	6
$4\frac{1}{4}$	3.10	5.50	6
$4\frac{1}{2}$	3.20	5.80	6
$4\frac{3}{4}$	3.30	6.10	6
5	3.45	6.40	6
$5\frac{1}{8}$	3.60	6.70	6
$5\frac{1}{4}$	3.75	7.00	6
$5\frac{1}{2}$	3.90	7.40	6
$5\frac{3}{4}$	4.05	7.80	6
6	4.20	8.20	6
$6\frac{1}{8}$	4.35	8.60	6
$6\frac{1}{4}$	4.50	9.00	6

High Speed Drills with $\frac{5}{8}$ inch shank will be furnished in sizes over $\frac{3}{4}$ inch diameter only at customer's risk, as we do not consider the shanks strong enough.

Unless otherwise specified these drills will always be furnished with flatted shanks.

Shanks are $2\frac{1}{4}$ Inches Long and .648 Inch Exact Diameter—Commonly Called $\frac{5}{8}$ Inch

Diameter inches	Price each		Length Over All inches
	Carbon Steel	High Speed	
$\frac{1}{2}$	\$0.50	....	4 $\frac{7}{8}$
$\frac{5}{8}$	.55	....	4 $\frac{7}{8}$
$\frac{3}{4}$	.60	....	5 $\frac{5}{8}$
$\frac{7}{8}$	.65	....	5 $\frac{5}{8}$
$\frac{1}{2}$	.70	\$1.20	6
$\frac{5}{8}$	.75	1.30	6
$\frac{3}{4}$	.80	1.40	6
$\frac{7}{8}$	.85	1.50	6
$\frac{1}{2}$	.90	1.55	6
$\frac{5}{8}$	.95	1.65	6
$\frac{3}{4}$	1.00	1.70	6
$\frac{7}{8}$	1.05	1.80	6
$\frac{1}{2}$	1.10	1.85	6
$\frac{5}{8}$	1.15	1.95	6
$\frac{3}{4}$	1.20	2.05	6
$\frac{7}{8}$	1.25	2.20	6
$\frac{1}{2}$	1.30	2.30	6
$\frac{5}{8}$	1.40	2.40	6
$\frac{3}{4}$	1.50	2.50	6
$\frac{7}{8}$	1.60	2.65	6
$\frac{1}{2}$	1.70	2.75	6
$\frac{5}{8}$	1.80	2.90	6
$\frac{3}{4}$	1.90	3.00	6
$\frac{7}{8}$	2.00	3.15	6
$\frac{1}{2}$	2.10	3.30	6
$\frac{5}{8}$	2.20	3.50	6
$\frac{3}{4}$	2.30	3.70	6
$\frac{7}{8}$	2.40	3.90	6
$\frac{1}{2}$	2.50	4.10	6
1	2.60	4.30	6
$1\frac{1}{16}$	2.70	4.50	6
$1\frac{1}{8}$	2.80	4.75	6
$1\frac{1}{4}$	2.90	5.00	6
$1\frac{1}{2}$	3.00	5.25	6
$1\frac{3}{8}$	3.10	5.50	6
$1\frac{1}{2}$	3.20	5.80	6
$1\frac{3}{4}$	3.30	6.10	6
$1\frac{7}{8}$	3.45	6.40	6
2	3.60	6.70	6
$2\frac{1}{8}$	3.75	7.00	6
$2\frac{1}{4}$	3.90	7.40	6
$2\frac{3}{8}$	4.05	7.80	6
$2\frac{1}{2}$	4.20	8.20	6
$2\frac{7}{8}$	4.35	8.60	6
3	4.50	9.00	6

BIT STOCK DRILLS

(For Metal or Wood)

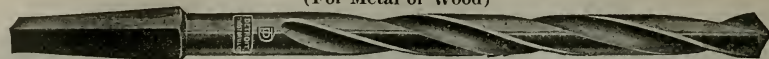


Fig. 504E

Diameter inches	Carbon Steel		Length Over All inches	Diameter inches	Carbon Steel		Length Over All inches
	Price per doz.	Price each			Price per doz.	Price each	
$\frac{1}{16}$	\$2.50	\$0.21	$3\frac{1}{8}$	$\frac{1}{8}$	\$11.75	\$0.98	$6\frac{3}{4}$
$\frac{3}{32}$	2.60	.22	4	$\frac{1}{2}$	13.00	1.08	7
$\frac{1}{4}$	2.70	.23	4	$\frac{3}{4}$	14.25	1.19	$7\frac{1}{4}$
$\frac{5}{16}$	2.85	.24	4	$\frac{1}{2}$	15.50	1.28	$7\frac{1}{2}$
$\frac{3}{8}$	3.00	.25	4	$\frac{1}{2}$	16.75	1.40	$7\frac{1}{2}$
$\frac{7}{16}$	3.25	.27	$4\frac{1}{4}$	$\frac{1}{2}$	18.00	1.50	$7\frac{1}{2}$
$\frac{1}{2}$	3.50	.29	$4\frac{1}{2}$	$\frac{1}{2}$	19.50	1.65	$7\frac{1}{2}$
$\frac{9}{16}$	3.75	.31	$4\frac{1}{2}$	$\frac{1}{2}$	21.00	1.75	$7\frac{1}{2}$
$\frac{5}{8}$	4.00	.33	$4\frac{3}{4}$	$\frac{1}{2}$	22.50	1.87	$7\frac{1}{2}$
$\frac{11}{16}$	4.25	.35	$4\frac{3}{4}$	$\frac{3}{4}$	24.00	2.00	$7\frac{1}{2}$
$\frac{3}{4}$	4.50	.37	$4\frac{3}{4}$	$\frac{3}{4}$	25.50	2.12	$7\frac{1}{2}$
$\frac{7}{8}$	4.75	.39	5	$\frac{1}{2}$	27.00	2.25	$7\frac{1}{2}$
$\frac{1}{2}$	5.00	.42	5	$\frac{1}{2}$	28.50	2.37	$7\frac{1}{2}$
$\frac{1}{2}$	5.50	.46	$5\frac{1}{4}$	$\frac{1}{2}$	30.00	2.50	$7\frac{1}{2}$
$\frac{1}{2}$	6.00	.50	$5\frac{1}{4}$	$\frac{1}{2}$	31.50	2.63	$7\frac{1}{2}$
$\frac{1}{2}$	6.50	.54	$5\frac{1}{2}$	$\frac{1}{2}$	33.00	2.75	$7\frac{1}{2}$
$\frac{1}{2}$	7.00	.58	$5\frac{1}{2}$	$\frac{1}{2}$	34.50	2.89	$7\frac{1}{2}$
$\frac{1}{2}$	7.50	.62	$5\frac{1}{2}$	1	36.00	3.00	$7\frac{1}{2}$
$\frac{1}{2}$	8.00	.66	$5\frac{1}{2}$	$1\frac{1}{8}$	39.00	3.25	$7\frac{1}{2}$
$\frac{1}{2}$	8.50	.71	6	$1\frac{1}{8}$	42.00	3.50	$7\frac{1}{2}$
$\frac{1}{2}$	9.25	.77	$6\frac{1}{4}$	$1\frac{1}{8}$	45.00	3.75	$7\frac{1}{2}$
$\frac{1}{2}$	10.50	.87	$6\frac{1}{2}$	$1\frac{1}{4}$	48.00	4.00	$7\frac{1}{2}$

These Bit Stock Drills fit any brace on the market and will drill steel, iron or other metals as well as wood. They are not injured by contact with screws or nails, and will bore straight any kind of wood without splitting it.

TAPER SQUARE SHANK RATCHET DRILLS



Fig. 504D

No. 1 Shanks— $\frac{3}{8}$ inch by $\frac{5}{8}$ inch by $1\frac{1}{2}$ inches long. No. 2 Shanks— $\frac{1}{2}$ inch by $\frac{3}{4}$ inch by $1\frac{3}{4}$ inches long. Unless otherwise specified No. 1 Shank will be furnished, except on High Speed Drills over 1 inch, which will be equipped with No. 2 Shank.

To avoid mistakes in ordering specify figure number and dimensions of shank.

Diameter inches	Price each		Length Over All Inches	Diameter inches	Price each		Length Over All Inches	Diameter inches	Price each		Length Over All Inches
	Carbon Steel	High Speed			Carbon Steel	High Speed			Carbon Steel	High Speed	
$\frac{1}{8}$	\$0.90	\$2.30	$4\frac{1}{2}$	$\frac{1}{16}$	\$1.45	\$3.40	$6\frac{1}{2}$	$1\frac{1}{4}$	\$3.65	\$7.90	9
$\frac{3}{32}$	.95	2.35	$4\frac{1}{2}$	$\frac{1}{8}$	1.50	3.50	$6\frac{1}{2}$	$1\frac{3}{8}$	3.75	8.25	9
$\frac{1}{4}$	.95	2.40	$4\frac{1}{2}$	$\frac{3}{16}$	1.55	3.65	$6\frac{1}{2}$	$1\frac{7}{8}$	3.90	8.60	9
$\frac{5}{16}$	1.00	2.45	5	$\frac{1}{4}$	1.65	3.80	$6\frac{1}{2}$	$1\frac{1}{2}$	4.05	9.00	9
$\frac{3}{8}$	1.00	2.50	5	$\frac{1}{2}$	1.75	4.00	7	$1\frac{3}{4}$	4.20	9.40	9
$\frac{7}{16}$	1.05	2.55	5	$\frac{3}{4}$	1.90	4.20	7	$1\frac{1}{2}$	4.35	9.80	9
$\frac{1}{2}$	1.10	2.60	5	$\frac{1}{2}$	2.05	4.50	$7\frac{1}{2}$	$1\frac{7}{8}$	4.50	10.20	9
$\frac{9}{16}$	1.15	2.65	5	$\frac{1}{2}$	2.20	4.70	$7\frac{1}{2}$	$1\frac{1}{2}$	4.65	10.60	9
$\frac{5}{8}$	1.20	2.70	6	$\frac{1}{2}$	2.30	5.00	8	$1\frac{1}{2}$	4.80	11.00	9
$\frac{11}{16}$	1.25	2.75	$6\frac{1}{4}$	$\frac{1}{2}$	2.40	5.25	8	$1\frac{1}{8}$	5.10	12.50	9
$\frac{3}{4}$	1.25	2.80	$6\frac{1}{4}$	1	2.55	5.50	$8\frac{1}{2}$	$1\frac{1}{8}$	5.40	14.00	9
$\frac{7}{8}$	1.30	2.85	$6\frac{1}{4}$	$1\frac{1}{8}$	2.70	5.75	$8\frac{1}{2}$	$1\frac{1}{8}$	5.75	15.50	9
$\frac{1}{2}$	1.30	2.90	$6\frac{1}{2}$	$1\frac{1}{8}$	2.85	6.00	$8\frac{1}{2}$	$1\frac{3}{4}$	6.10	17.00	9
$\frac{1}{2}$	1.35	2.95	$6\frac{1}{2}$	$1\frac{1}{8}$	3.00	6.30	$8\frac{1}{2}$	$1\frac{1}{2}$	6.50	18.50	9
$\frac{1}{2}$	1.35	3.00	$6\frac{1}{2}$	$1\frac{1}{8}$	3.10	6.70	9	$1\frac{7}{8}$	6.90	20.50	9
$\frac{1}{2}$	1.40	3.10	$6\frac{1}{2}$	$1\frac{1}{8}$	3.25	7.00	9	$1\frac{1}{2}$	7.30	22.50	9
$\frac{5}{8}$	1.40	3.20	$6\frac{1}{2}$	$1\frac{1}{8}$	3.35	7.30	9	2	7.75	25.00	9
$\frac{3}{4}$	1.45	3.30	$6\frac{1}{2}$	$1\frac{1}{2}$	3.50	7.60	9				

FOR RATCHETS AND BIT BRACES, SEE INDEX

DRILLS IN SETS

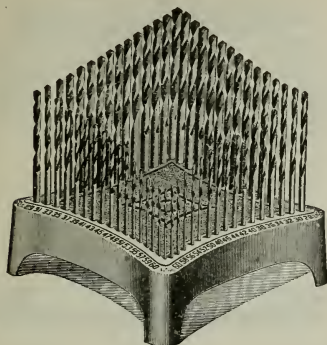


Fig. 80

No. 80 SET

This set comprises all the sizes of straight shank drills, steel wire gauge, from No. 1 to 60, inclusive. The size drill fitting each hole is plainly marked on the stand. As even numbers are placed on one side and odd on the other, selection is made easy.

PRICES

Stand with drills, complete.....\$0.75 Stand only.....\$1.00

These stands are of a peculiar composition metal, admirably adapted for the purpose and will not rust. The finish is in oxidized copper, making a very beautiful and lasting effect. They are especially useful in tool rooms and on mechanics' benches.

No. 50 SET

This set comprises all the sizes of Jobbers' straight shank drills from $\frac{1}{16}$ inch to $\frac{1}{2}$ inch, inclusive, by 64ths. Each drill fits in a hole plainly marked with its size.

As all the 32nd sizes are on one side and the 64th sizes on the opposite side, selection is made easy.

PRICES

Stand with drills, complete.....\$1.50 Stand only.....\$1.00

No. 13 SET

This set consists of the following sizes Bit Stock Drills:

$\frac{1}{16}$, $\frac{3}{32}$, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$ in.

They are contained in a handsome hardwood box, 2 $\frac{1}{2}$ inches in diameter and 6 $\frac{1}{2}$ inches long.

Price complete,
\$2.75

No. 14B SET

This set consists of the following sizes Bit Stock Drills:

$\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$ in.

The flat case that goes with this set is covered with a strong leatherette, green in color, gold embossed.

Size, 7x3 $\frac{1}{2}$ x $\frac{3}{4}$ inches.

Price complete, \$2.65

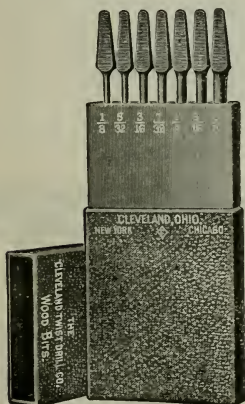


Fig. 14B



Fig. 13

FOR RATCHETS, BIT BRACES, DRILL PRESSES, ETC., SEE INDEX

DRILL SOCKETS AND SLEEVES—CENTER DRILLS

Always Give List Number When Ordering

STEEL SOCKETS

(Rough)

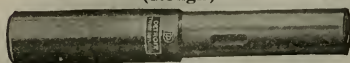


Fig. 100

Size No.	Price each	Holds Tools inches, inc.	Length Over all inches	Diameter of Shank inches
1	\$ 1.20	3/4 to 1	7 1/2	1 1/8
2	1.80	1 to 1 1/4	8	1 1/4
3	2.50	1 1/4 to 2	10	1 1/2
4	4.00	2 to 3	12 1/2	2
5	7.50	3 to 4	16	2 3/4
6	14.00	4 to 5	19	3 3/4

STEEL SOCKETS

(Fitted)

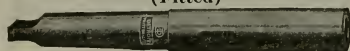


Fig. 101

Size No.	Hole No.	Shank No.	Price each
1 to 2	1	2	\$ 2.00
1 to 3	1	3	2.50
1 to 4	1	4	3.20
1 to 5	1	5	4.80
2 to 3	2	3	2.50
2 to 4	2	4	3.20
2 to 5	2	5	4.80
3 to 2	3	2	3.20
3 to 3	3	3	3.20
3 to 4	3	4	3.20
3 to 5	3	5	4.80
4 to 3	4	3	4.80
4 to 4	4	4	4.80
4 to 5	4	5	4.80
4 to 6	4	6	12.00
5 to 4	5	4	12.00
5 to 5	5	5	12.00
5 to 6	5	6	12.00

STEEL SLEEVES

For Taper Shank Drills

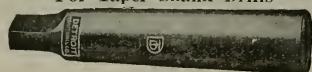


Fig. 102

Size No.	Hole No.	Outside Fitting Socket No.	Price each
1 to 2	1	2	\$ 1.80
1 to 3	1	3	2.40
1 to 4	1	4	3.00
1 to 5	1	5	4.40
2 to 3	2	3	2.40
2 to 4	2	4	3.00
2 to 5	2	5	4.40
3 to 4	3	4	3.00
3 to 5	3	5	4.40
4 to 5	4	5	4.40
4 to 6	4	6	10.00
5 to 6	5	6	10.00

CENTER OR DRIFT KEYS

For Sockets and Sleeves



Fig. 102A

Size No.	Description	Price each
1	Fitting No. 1 Sockets and Sleeves	\$0.30
2	Fitting No. 2 Sockets and Sleeves	.35
3	Fitting No. 3 Sockets and Sleeves	.40
4	Fitting No. 4, 5 and 6 Sockets and Sleeves	.50

FOR TABLE OF DECIMAL EQUIVALENTS, SEE INDEX

COMBINED DRILLS AND COUNTERSINKS

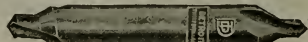


Fig. 140

Size	Diameter of Body	Diameter of Drills	Price per dozen
A	.302	3/8 and 1/2	\$1.50
B	.302	1/2 and 3/4	1.50
C	.302	3/4 and 1	1.50
D	15/64	1 and 1 1/4	1.50
E	13/64	1 1/4 and 1 1/2	1.50
F	1/8	1 1/2 and 1 3/4	3.00
G	1/8	1 3/4 and 2	3.00
H	1/8	2 and 2 1/4	3.00

With Taper Shanks



Fig. 140A

Diameter of Body inches	Diameter of Drill inches	Price each	Length Over All inches	Shank Taper
1/8	1/8	\$0.75	4 1/8	No. 1
1/8	3/8	.75	4 1/8	
1/8	1/2	.75	4 1/8	
1/8	3/4	.75	4 1/8	
1/8	1	.75	4 1/8	
1/8	No. 22	.75	4 1/8	
1/8	No. 13	.75	4 1/8	
1/8			4 1/8	

The angle of countersink is 60°. Special sizes and angles made to order.

CENTER DRILLS



Fig. 119

Diameter inches	Price per doz.	Length Over All	Diameter inches	Price per doz.	Length Over All
1/8	\$0.80	1	11/64	\$1.70	1 1/2
5/64	.90	1	1/8	1.90	1 1/2
3/8	1.10	1 1/4	13/64	2.10	1 1/2
7/64	1.20	1 1/4	1/2	2.35	1 1/2
1/2	1.25	1 1/4	15/64	2.60	1 1/2
9/64	1.35	1 1/4	3/4	2.85	1 1/2
3/4	1.50	1 1/2	17/64	3.10	1 1/2

CENTER REAMERS



Style No. 1

Fig. 120

Style No. 2

Included Angle 60°

Size Cut inches	Carbon Steel Price per doz.	Price each	Whole Length inches	Diam. Shank inches	Length Shank inches
1/4	\$2.50	\$2.90	\$0.22	\$0.25	1 1/2
3/8	2.90	3.25	.25	.30	1 1/2
1/2	3.25	3.75	.30	.35	2
3/4	6.00	7.00	.50	.60	2 1/2
1	8.00	8.50	.70	.75	2 1/2

Special angles made to order at "special prices."

DRILL CHUCKS

UNIVERSAL LATHE CHUCKS

Three and Four Jawed, Nos. 11 and 12

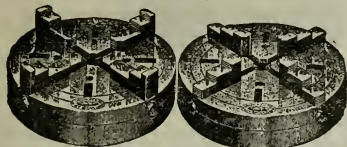


Fig. 50SA

No. 11. Outside Jaw No. 12. Inside Jaw

Cut represents Universal Lathe Chuck, in all sizes from 3 to 42 inches, inclusive, with Reverse Jaw. This Chuck is used for holding rings, rods, pipe, drills, etc. It is an excellent Chuck for brass finishing.

We can furnish with three or four jaws as desired.

Dia. Chuck with Either Style Jaw Inches	3 Jaws, each	4 Jaws, each
3	\$17.00	\$19.00
4	19.00	21.00
5	21.00	23.00
6	24.00	27.00
7 1/2	27.00	30.00
9	33.00	36.00
10 1/2	38.00	42.00
12	45.00	50.00
15	60.00	65.00
18	80.00	87.00
21	105.00	115.00

THE INDEPENDENT 4-JAW CHUCKS

Reversible Jaws.

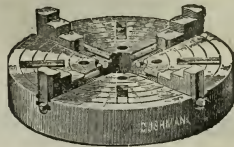


Fig. 50SB

Illustrating the 8, 9, and 10 Inch Sizes

Size	Size of Fole	Size of Face-Plate Recess	Each
4 1/2	1	4 3/4	\$20.00
6	1 3/4	5 1 1/2	22.00
8	1 7/8	4 3/4	26.00
9	1 7/8	4 3/4	28.00
10	2	4 3/4	30.00
12	2 7/8	6 1 1/2	35.00
14	3	6 1 1/2	40.00
15	3	7 1 1/2	43.00
16	3	7 1 1/2	46.00
18	4	9 1/2	54.00
20	4	9 1/2	62.00
22	4 3/4	11	70.00
24	4 3/4	11	80.00
26	4 3/4	12	93.00

NATIONAL ROUND BODY DRILL CHUCK

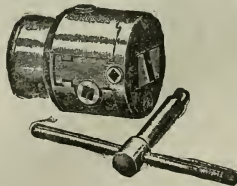


Fig. 50SD

NATIONAL DRILL CHUCKS, PLAIN



Fig. 50SC

No.	Holding Drills	Each
8	0 to 1/4	\$ 5.00
9	0 to 3/8	5.50
10	0 to 1/2	6.50
11	0 to 3/4	7.50
12	0 to 1	10.00
13	0 to 1 1/2	16.00
14	0 to 2	18.00

No.	Drill Capacity	Each	Screws	Jaws per set	Dia. of Body	Lgth. of Body
18	0 to 1/4	\$ 7.00	\$1.00	\$2.00	1 1/8	2 1/2
19	0 to 3/8	7.00	1.00	2.25	1 1/4	2 3/4
20	0 to 1/2	8.00	1.00	2.30	2 1/2	3 1/2
21	0 to 3/4	9.00	1.00	2.45	3	3 3/4
22	0 to 1	10.00	1.15	2.80	3 1/2	3 7/8
22 1/2	0 to 1	11.00	1.45	3.45	4	3 7/8
23	0 to 1 1/2	13.00	2.45	5.10	6	4 1/4
24	0 to 2	20.00	3.10	6.30	6 1/2	4 1/2

THE JACOBS IMPROVED DRILL CHUCK



Fig. 509E. The Jacobs Improved Drill Chuck

No.	Style	Capacity, ins.	Each
1	Regular	0 to 1 1/8	\$5.50
1A	Flat Back	0 to 1/4	5.50
2	Regular	0 to 1 1/8	5.50
2A	Flat Back	0 to 3/8	5.50
3	Regular	0 to 1 1/8	9.00
3A	Flat Back	0 to 1/2	9.00
4	Regular	1/8 to 3/4	18.00
5	Regular	3/8 to 1	25.00

TAPS

MACHINISTS' HAND TAPS



Fig. 300 Taper



Fig. 301 Plug



Fig. 302 Bottoming

Always give figure number when ordering.

U. S. Std. threads sent unless otherwise specified.

Threads in heavy type are standard.

Size Inches	No. Threads	Carbon Steel Price each
$\frac{1}{16}$	60, 64, 72	\$0.70
$\frac{1}{8}$	56, 60, 64, 72	.60
$\frac{3}{16}$	48, 50, 54, 56, 60	.50
$\frac{1}{4}$	44, 48, 56	.40
$\frac{5}{16}$	32, 36, 40, 48, 50	.35
$\frac{3}{8}$	32, 36, 40	.35
$\frac{7}{16}$	30, 32, 36, 40	.35
$\frac{1}{2}$	32, 36	.35
$\frac{5}{8}$	24, 30, 32, 36	.35
$\frac{3}{4}$	24, 32	.35
$\frac{7}{8}$	24, 28, 32	.35
$\frac{1}{16}$	24, 28, 32	.35
$\frac{1}{8}$	20, 24, 27, 32	.45
$\frac{3}{16}$	18, 20, 24, 27, 32	.50
$\frac{1}{4}$	14, 16, 18, 20, 24, 27	.55
$\frac{5}{16}$	12, 14, 16, 20, 24, 27	.60
$\frac{3}{8}$	12, 13, 14, 16, 20, 24, 27	.70
$\frac{7}{16}$	12, 14, 27	.80
$\frac{1}{2}$	10, 11, 12, 20, 24, 27	.80
$\frac{5}{8}$	10, 11, 12	1.05
$\frac{3}{4}$	10, 12, 20, 27	1.20
$\frac{7}{8}$	10, 12	1.40
$\frac{1}{16}$	9, 10, 12, 27	1.60
$\frac{1}{8}$	9, 12	1.80
$\frac{1}{4}$	8, 12, 27	2.00
$\frac{3}{16}$	7, 8, 12	2.15
$\frac{1}{2}$	7, 12	2.25
$\frac{5}{8}$	7	2.45
$\frac{3}{4}$	6	2.60
$\frac{7}{8}$	6	2.80
$\frac{1}{16}$	6	3.00
$\frac{1}{8}$	6	3.25
$\frac{3}{16}$	6	3.50
$\frac{1}{4}$	5	4.20
$\frac{5}{16}$	4	5.00
$\frac{3}{8}$	4	5.80
$\frac{7}{16}$	4	6.70
$\frac{1}{2}$	4	8.00
$\frac{5}{8}$	4	9.20
$\frac{3}{4}$	4	10.50
$\frac{7}{8}$	4	11.50
$\frac{1}{16}$	4	13.00
$\frac{1}{8}$	4	14.00
$\frac{3}{16}$	4	15.50
$\frac{1}{4}$	3	17.00
$\frac{5}{16}$	3	18.75
$\frac{3}{8}$	3	20.50
$\frac{7}{16}$	3	22.00
$\frac{1}{2}$	3	24.00
$\frac{5}{8}$	3	26.00
$\frac{3}{4}$	3	28.50
$\frac{7}{8}$	3	30.00
$\frac{1}{16}$	3	32.50

All sizes not listed subject to "special prices."

MACHINE SCREW TAPS



Fig. 303

Always give figure number when ordering.

Size of Screw Gauge No.	Carbon Steel Price per dozen	Carbon Steel Price each	Stand- ard No. of Threads	Threads Also Furnished
1	\$4.00	\$0.70	....	56, 60, 64, 72
1 1/2	4.00	.70	56	56
2	4.00	.60	56	48, 64
3	4.00	.50	48	40, 56
4	4.00	.40	36	32, 40, 42, 48
5	4.00	.35	36	32, 40
6	4.00	.35	32	30, 36, 38, 40, 48
7	4.00	.35	32	30, 40
8	4.00	.35	32	30, 36, 40
9	4.00	.35	30	28, 32
10	4.00	.35	24	28, 30, 32, 36
11	4.00	.35	24	28, 30
12	4.00	.35	24	20, 32
13	4.40	.45	22	20, 24, 32
14	4.40	.45	20	18, 24
15	4.40	.45	20	18, 24
16	4.40	.45	18	16, 20
18	4.40	.50	18	16, 20
20	5.30	.50	16	18
22	5.30	.55	16	18
24	5.30	.55	16	14, 18
26	6.30	.55	16	14
28	6.30	.60	14	16
30	6.30	.60	14	16

All sizes not listed subject to "special prices."

STOVE BOLT TAPS



Fig. 305

Diameter Inches	Number of Threads to inch	Carbon Steel Price per dozen	Carbon Steel Price each
$\frac{5}{16}$	28	\$4.20	\$0.35
$\frac{3}{8}$	24	4.20	.35
$\frac{1}{2}$	22	4.20	.35
$\frac{5}{8}$	18	5.40	.45
$\frac{3}{4}$	18	6.00	.50
$\frac{7}{8}$	16	6.60	.55

BIT BRACE TAPS



Fig. 498

All Bit Brace Taps are sent even size, "V" Standard, unless otherwise ordered.

Diameter Inches	Number of Threads to inch	Each
$\frac{3}{8}$	24	\$0.50
$\frac{1}{4}$	16, 18, 20	.50
$\frac{5}{16}$	16, 18	.65
$\frac{3}{8}$	14, 16	.60
$\frac{7}{16}$	12, 14	.70
$\frac{1}{2}$	12, 13	.80

FOR MACHINE AND STOVE BOLTS, SEE INDEX

TAPS



Fig. 4990

STAY BOLT TAPS

Read This. It is Important.

All orders for these taps should give exact diameter and number of threads per inch, also length of parts, A, B, C, D, and E.

Stay Bolt Taps with 10, 11, 12 and 13 threads in either "V" or U. S. S. threads furnished at regular prices. However, 12 is the regular number and taps are always furnished with this number unless otherwise ordered.

Diameter inches	EACH											
	16 in.	18 in.	21 in.	24 in.	27 in.	30 in.	33 in.	36 in.	39 in.	42 in.	48 in.	54 in.
$\frac{3}{4}$, 13, $\frac{7}{8}$	\$5.60	\$7.20	\$8.00	\$8.80	\$10.90	\$13.00	\$14.00	\$15.00	\$16.50	\$18.00	\$19.00	\$20.00
$\frac{1}{8}$, 1	6.60	8.50	9.35	10.20	12.25	14.25	15.40	16.50	18.00	19.75	21.00	22.25
$1\frac{1}{8}$, $1\frac{1}{8}$	7.60	9.50	10.35	11.20	13.25	15.25	16.40	17.50	20.00	22.00	23.50	25.00
$1\frac{1}{8}$, $1\frac{1}{4}$	9.00	10.50	12.00	12.75	14.75	16.50	18.00	19.50	22.00	24.00	25.50	27.00
$1\frac{1}{8}$, $1\frac{3}{8}$	11.00	12.50	14.00	15.00	17.00	18.50	20.00	21.50	24.00	26.00	28.00	30.00
$1\frac{1}{8}$, $1\frac{1}{2}$	13.00	14.50	16.00	17.00	19.00	20.00	22.00	23.50	26.00	28.00	30.00	32.00

PIPE TAPS

Regular Iron Pipe Sizes

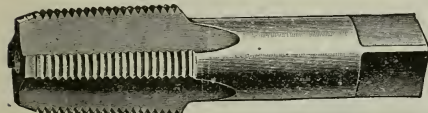


Fig. 304

Diam. inches	Carbon Steel Price Each	Diam. inches	Carbon Steel Price Each	Diam. inches	Carbon Steel Price Each
$\frac{1}{8}$	\$1.12	1	\$3.12	$2\frac{1}{2}$	\$10.50
$\frac{1}{4}$	1.25	$1\frac{1}{4}$	3.75	3	15.00
$\frac{3}{8}$	1.50	$1\frac{1}{2}$	4.62	$3\frac{1}{2}$	22.00
$\frac{1}{2}$	1.87	2	6.25	4	33.00
$\frac{3}{4}$	2.50	...	...	...	...

COMBINED PIPE TAP AND DRILL

For Tapping Gas and Water Pipes

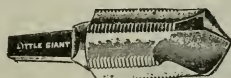


Fig. 4995

Sizes	Length	Each	Sizes	Length	Each
$\frac{1}{4}$	$3\frac{3}{4}$	\$1.50	$1\frac{1}{4}$	5	\$4.80
$\frac{3}{8}$	4	1.75	$1\frac{1}{2}$	$5\frac{1}{2}$	5.80
$\frac{1}{2}$	$4\frac{1}{4}$	2.20	2	$5\frac{3}{4}$	7.60
$\frac{3}{4}$	$4\frac{1}{2}$	3.00	$2\frac{1}{2}$	$6\frac{1}{2}$	10.00
1	$4\frac{3}{4}$	3.80	...	...	...

Shanks for sizes $\frac{1}{4}$ to $1\frac{1}{2}$ inches are $\frac{11}{16}$ inch by $\frac{1}{2}$ inch, and $1\frac{1}{4}$ inches long.

Shanks for sizes 2 and $2\frac{1}{2}$ inches are 1 inch by $\frac{3}{4}$ inch, and 2 inches long.

MUD PLUG OR WASHOUT TAPS

For Washout Holes in Locomotives

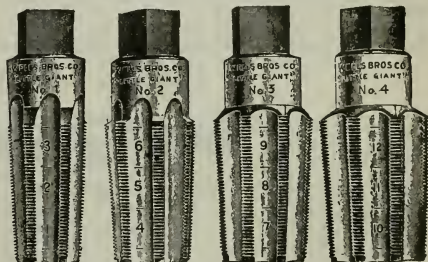


Fig. 4991	Fig. 4492	Fig. 4493	Fig. 4994
No. 1. $1\frac{3}{4}$ to $2\frac{1}{8}$	No. 2. $2\frac{1}{8}$ to $2\frac{3}{8}$	No. 3. $2\frac{3}{8}$ to $2\frac{1}{2}$	No. 4. $2\frac{1}{2}$ to 3
each \$6.00	" 7.50	" 9.00	" 10.50

These Taps will be furnished with "V" form thread, 12 to the inch unless otherwise ordered.

PATCH BOLT TAPS

12 "V" Threads per Inch



Fig. 4996

Sizes	Lgth. Over All In.	No. of Thr'ds	Each	Sizes	Lgth. Over All In.	No. of Thr'ds	Each
$\frac{1}{2}$	3	12	\$0.70	$\frac{1}{8}$	3	12	\$1.40
$\frac{3}{8}$	3	12	.80	$\frac{7}{8}$	3	12	1.60
$\frac{1}{4}$	3	12	.90	$\frac{1}{2}$	3	12	1.80
$\frac{1}{8}$	3	12	1.05	1	3	12	2.00
$\frac{3}{4}$	3	12	1.20	$1\frac{1}{8}$	3	12	2.25
...	...	...	...	$1\frac{1}{4}$	3	12	2.60

TAPS AND ARBORS



MACHINE OR NUT TAPS

"V" Form of Threads or U. S. Standard

Sizes	Number of threads to inch	Whole Length inches	Each	Sizes	Number of threads to inch	Whole Length inches	Each	Sizes	Number of threads to inch	Whole Length inches	Each	Sizes	Number of threads to inch	Whole Length inches	Each
$\frac{1}{16}$	24	$4\frac{1}{2}$	\$0.60	$\frac{1}{8}$	10	11	\$1.80	$1\frac{1}{4}$	5	17	\$7.20	3	$3\frac{1}{2}$	21	\$21.60
$\frac{1}{8}$	16, 18, 20	5	.60	$\frac{9}{16}$	9, 10	11	2.10	$1\frac{1}{2}$	$4\frac{1}{2}$, 5	$17\frac{3}{4}$	8.25	$3\frac{1}{8}$	$3\frac{1}{2}$	21	24.70
$\frac{3}{16}$	16, 18	$5\frac{3}{4}$	.70	$\frac{11}{16}$	9	11	2.40	2	$4\frac{1}{2}$	$18\frac{1}{2}$	9.25	$3\frac{1}{4}$	$3\frac{1}{2}$	21	26.88
$\frac{1}{4}$	14, 16	$6\frac{1}{2}$	.80	1	8	12	3.15	$2\frac{1}{8}$	$4\frac{1}{2}$	$18\frac{1}{2}$	10.80	$3\frac{3}{8}$	$3\frac{1}{2}$	21	28.75
$\frac{5}{16}$	12, 14, 16	$7\frac{1}{4}$	.90	$1\frac{1}{8}$	7, 8	12	3.60	$2\frac{3}{8}$	$4\frac{1}{2}$	$18\frac{1}{2}$	12.25	$3\frac{1}{2}$	$3\frac{1}{2}$	21	31.25
$\frac{3}{8}$	12, 13, 14	8	1.00	$1\frac{1}{4}$	7, 8	$13\frac{3}{4}$	4.25	$2\frac{1}{2}$	$4\frac{1}{2}$	18	13.80	$3\frac{5}{8}$	$3\frac{1}{4}$	21	33.75
$\frac{7}{16}$	12, 14	$8\frac{3}{4}$	1.15	$1\frac{3}{8}$	6	14	4.80	$2\frac{3}{4}$	4	19	15.00	$3\frac{3}{4}$	3	21	36.88
$\frac{1}{2}$	10, 11, 12	$9\frac{1}{2}$	1.30	$1\frac{1}{2}$	6	$15\frac{1}{2}$	5.65	$2\frac{7}{8}$	4	$19\frac{1}{2}$	16.80	$3\frac{7}{8}$	3	21	38.75
$\frac{9}{16}$	11, 12	$10\frac{1}{4}$	1.45	$1\frac{5}{8}$	5, $5\frac{1}{2}$	$16\frac{1}{4}$	6.50	$3\frac{1}{8}$	4	$19\frac{1}{2}$	18.80	4	3	21	41.80
$\frac{5}{8}$	10	$10\frac{3}{4}$	1.60					$3\frac{1}{4}$	4	$19\frac{1}{2}$	19.80				

We can furnish the above threads in "V" and United States Standard Shapes.

Unless advised to the contrary, we fill orders with "V" form and in threads as indicated in heavy type.

We also can furnish $\frac{1}{16}$ and $\frac{1}{8}$ oversize, up to $\frac{3}{4}$ inch, and $\frac{3}{16}$ oversize, up to $1\frac{1}{2}$ inch.

In ordering, always state exact diameter and thread wanted.

ARBORS FOR SHELL REAMERS



With Taper Shank

Size No.	Each	Fitting Sizes, in.	Length Over All In.	Shank Taper	Size No.	Each	Fitting Sizes, in.	Length Over All In.	Shank Taper
2	\$2.40	$\frac{3}{8}$ to $\frac{7}{16}$	$7\frac{1}{8}$	} No. 1	8	\$4.10	$1\frac{1}{8}$ to 2	$13\frac{7}{16}$	} No. 4
3	2.40	$\frac{1}{2}$ to $\frac{5}{8}$	$8\frac{1}{8}$		9	4.25	$2\frac{1}{8}$ to $2\frac{1}{2}$	$14\frac{1}{2}$	
4	2.70	$\frac{1}{2}$ to $\frac{3}{4}$	$9\frac{1}{8}$	} No. 2	10	5.00	$2\frac{3}{8}$ to 3	$15\frac{9}{16}$	} No. 5
5	2.70	$\frac{1}{2}$ to 1	$10\frac{1}{4}$		11	6.00	$3\frac{1}{8}$ to $3\frac{1}{2}$	$16\frac{5}{8}$	
6	3.30	$1\frac{1}{8}$ to $1\frac{1}{4}$	$11\frac{1}{8}$	} No. 3	12	7.75	$3\frac{3}{8}$ to 4	$17\frac{3}{4}$	
7	3.60	$1\frac{1}{8}$ to $1\frac{1}{2}$	$12\frac{3}{8}$		13	9.50	$4\frac{1}{8}$ to $4\frac{1}{2}$	$19\frac{7}{8}$	
					14	12.75	$4\frac{3}{8}$ to 5	20	

ARBORS FOR SHELL REAMERS



With Straight Shank

Size No.	Each	Fitting Sizes	Length Over All inches	Size No.	Each	Fitting Sizes	Length Over All inches
2	\$1.40	$\frac{3}{8}$ to $\frac{7}{16}$	7	8	\$ 2.70	$1\frac{1}{8}$ to 2	12
3	1.60	$\frac{1}{2}$ to $\frac{5}{8}$	8	9	3.00	$2\frac{1}{8}$ to $2\frac{1}{2}$	13
4	1.80	$\frac{1}{2}$ to $\frac{3}{4}$	9	10	3.40	$2\frac{3}{8}$ to 3	14
5	2.00	$\frac{1}{2}$ to 1	$9\frac{1}{2}$	11	5.00	$3\frac{1}{8}$ to $3\frac{1}{2}$	15
6	2.20	$1\frac{1}{8}$ to $1\frac{1}{4}$	10	12	7.00	$3\frac{3}{8}$ to 4	16
7	2.40	$1\frac{1}{8}$ to $1\frac{1}{2}$	11	13	9.00	$4\frac{1}{8}$ to $4\frac{1}{2}$	17
				14	12.00	$4\frac{3}{8}$ to 5	18

OUR LINES OF MACHINISTS' TOOLS ARE ALWAYS COMPLETE

TAPER SHANK REAMERS

(Eccentric Flutes)

Fig. 152
High Speed, Fig. 152A

(Always Give Fig. Number When Ordering)

Diam. in.	Carbon Steel Price each	High Speed Steel Price each	Length of Flute in.	Length Over All in.	Shank Taper	Diam. in.	Carbon Steel Price each	High Speed Steel Price each	Length of Flute in.	Lgth. Over All in.	Shank Taper
$\frac{1}{4}$	\$1.70	\$4.00	2	$5\frac{1}{8}$	No. 1	$1\frac{3}{8}$	\$6.70	\$19.75	$6\frac{5}{16}$	$12\frac{1}{8}$	No. 4
$\frac{3}{8}$	1.75	4.25	2	$5\frac{1}{8}$		$1\frac{1}{2}$	6.95	21.50	$6\frac{7}{16}$	$12\frac{1}{8}$	
$\frac{1}{2}$	1.80	4.25	$2\frac{1}{4}$	$5\frac{1}{2}$		$1\frac{7}{8}$	7.20	21.50	$6\frac{7}{16}$	13	
$\frac{5}{8}$	1.85	4.75	$2\frac{1}{4}$	$5\frac{1}{2}$		$1\frac{3}{4}$	7.45	23.25	$6\frac{7}{16}$	13	
$\frac{3}{4}$	1.90	4.75	$2\frac{1}{4}$	$5\frac{1}{8}$		$1\frac{1}{2}$	7.70	23.25	$6\frac{1}{2}$	$13\frac{1}{8}$	
$\frac{7}{8}$	2.05	5.25	$2\frac{1}{2}$	$5\frac{1}{8}$		$1\frac{3}{4}$	7.90	25.00	$6\frac{1}{2}$	$13\frac{1}{8}$	
1	2.15	5.25	$2\frac{3}{4}$	$6\frac{1}{8}$		$1\frac{7}{8}$	8.15	25.00	$6\frac{1}{2}$	$13\frac{1}{8}$	
$1\frac{1}{8}$	2.20	5.75	$2\frac{3}{4}$	$6\frac{1}{8}$		$1\frac{3}{2}$	8.40	26.75	$6\frac{1}{2}$	$13\frac{1}{8}$	
$1\frac{1}{4}$	2.30	5.75	3	$6\frac{7}{8}$		$1\frac{3}{8}$	8.65	26.75	$6\frac{1}{2}$	$13\frac{1}{8}$	
$1\frac{3}{8}$	2.35	6.25	3	$6\frac{7}{8}$		$1\frac{3}{4}$	8.90	28.50	$6\frac{1}{2}$	$13\frac{1}{8}$	
$1\frac{1}{2}$	2.40	6.25	$3\frac{1}{4}$	$6\frac{3}{4}$		$1\frac{1}{2}$	9.10	28.50	$6\frac{3}{4}$	$13\frac{3}{8}$	
$1\frac{3}{4}$	2.50	6.75	$3\frac{1}{4}$	$6\frac{3}{4}$		$1\frac{3}{4}$	9.35	30.50	$6\frac{3}{4}$	$13\frac{3}{8}$	
$\frac{5}{8}$	2.65	6.75	$3\frac{1}{2}$	$7\frac{1}{8}$	No. 2	$1\frac{3}{4}$	9.60	30.50	$6\frac{3}{4}$	$14\frac{1}{8}$	No. 5
$\frac{3}{4}$	2.75	7.25	$3\frac{1}{2}$	$7\frac{1}{8}$		$1\frac{3}{8}$	9.85	32.50	$6\frac{3}{4}$	$14\frac{1}{8}$	
$\frac{1}{2}$	2.90	7.25	$3\frac{3}{8}$	8		$1\frac{1}{2}$	10.10	32.50	$6\frac{3}{4}$	$14\frac{1}{8}$	
$\frac{5}{8}$	3.00	7.75	$3\frac{3}{8}$	8		$1\frac{3}{4}$	10.30	34.50	$6\frac{3}{4}$	$14\frac{1}{8}$	
$\frac{3}{4}$	3.10	7.75	$4\frac{1}{8}$	$8\frac{3}{8}$		$1\frac{7}{8}$	10.55	34.50	7	15	
$\frac{7}{8}$	3.25	8.50	$4\frac{1}{8}$	$8\frac{3}{8}$		$1\frac{3}{2}$	10.80	36.75	7	15	
1	3.35	8.50	$4\frac{1}{8}$	$8\frac{1}{2}$		$1\frac{1}{2}$	11.05	36.75	7	15	
$1\frac{1}{8}$	3.55	9.50	$4\frac{1}{8}$	$8\frac{1}{2}$		$1\frac{3}{4}$	11.30	39.00	7	15	
$1\frac{1}{4}$	3.70	9.50	$4\frac{3}{8}$	$9\frac{1}{8}$		2	11.50	39.00	7	15	
$1\frac{3}{8}$	3.90	10.50	$4\frac{3}{8}$	$9\frac{1}{8}$		$2\frac{1}{8}$	10.00	41.75	$7\frac{1}{4}$	$15\frac{1}{2}$	
$1\frac{1}{2}$	4.10	10.50	$5\frac{1}{8}$	10		$2\frac{1}{4}$	10.40	44.50	$7\frac{1}{4}$	$15\frac{1}{2}$	
$1\frac{3}{4}$	4.25	11.50	$5\frac{3}{8}$	10		$2\frac{3}{8}$	10.80	47.25	$7\frac{1}{4}$	$15\frac{1}{2}$	
1	4.45	11.50	$5\frac{7}{8}$	$10\frac{3}{8}$	No. 3	$2\frac{1}{2}$	11.30	50.00	$7\frac{1}{4}$	$15\frac{1}{2}$	
$1\frac{1}{8}$	4.60	12.50	$5\frac{7}{8}$	$10\frac{3}{8}$		$2\frac{3}{8}$	11.80	53.25	$7\frac{1}{2}$	16	
$1\frac{1}{4}$	4.80	12.50	$5\frac{5}{8}$	$10\frac{5}{8}$		$2\frac{1}{2}$	12.30	56.50	$7\frac{1}{2}$	16	
$1\frac{3}{8}$	5.00	13.75	$5\frac{5}{8}$	$10\frac{5}{8}$		$2\frac{3}{4}$	12.80	59.75	$7\frac{1}{2}$	16	
$1\frac{1}{2}$	5.15	13.75	$5\frac{1}{2}$	$10\frac{7}{8}$		$2\frac{1}{2}$	13.40	63.00	$7\frac{1}{2}$	16	
$1\frac{3}{4}$	5.35	15.25	$5\frac{1}{2}$	$10\frac{7}{8}$		$2\frac{3}{8}$	14.00	66.25	$7\frac{3}{4}$	$16\frac{1}{2}$	
$1\frac{7}{8}$	5.50	15.25	5	$11\frac{1}{8}$		$2\frac{1}{2}$	14.60	69.50	$7\frac{3}{4}$	$16\frac{1}{2}$	
$1\frac{5}{8}$	5.70	16.75	9	$11\frac{1}{8}$		$2\frac{3}{4}$	15.40	72.75	$7\frac{3}{4}$	$16\frac{1}{2}$	
$1\frac{3}{4}$						$2\frac{3}{8}$	16.20	76.00	$7\frac{3}{4}$	$16\frac{1}{2}$	
$1\frac{1}{4}$	5.90	16.75	$6\frac{1}{8}$	$12\frac{1}{2}$	No. 4	$2\frac{1}{2}$	17.00	79.25	8	17	
$1\frac{3}{8}$	6.05	18.25	$6\frac{1}{8}$	$12\frac{1}{2}$		$2\frac{3}{8}$	17.80	82.50	8	17	
$1\frac{1}{2}$	6.25	18.25	$6\frac{1}{4}$	$12\frac{1}{2}$		$2\frac{1}{2}$	18.60	86.25	8	17	
$1\frac{5}{8}$	6.50	19.75	$6\frac{1}{4}$	$12\frac{1}{2}$		3	19.40	90.00	8	17	

The above furnished in 64th sizes if ordered and take price of the next larger size listed.

Furnished with Spiral Flutes if desired.

For Decimal Equivalents see index.

HAND REAMERS

(Eccentric Flutes)



Fig. 122

(Always Give Fig. Number When Ordering)

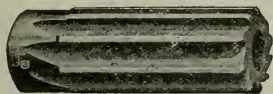
Diam. in.	Carbon Steel Price each	High Speed Steel Price each	Length of Flute in.	Length Over All in.	Diam. in.	Carbon Steel Price each	High Speed Steel Price each	Length of Flute in.	Length Over All in.
$\frac{1}{8}$	\$1.00	.....	$1\frac{1}{2}$	3	$1\frac{1}{8}$	\$5.40	\$18.75	$6\frac{1}{4}$	$12\frac{1}{4}$
$\frac{5}{32}$	1.10	.....	$1\frac{5}{8}$	$3\frac{1}{4}$	$1\frac{1}{8}$	5.60	18.75	$6\frac{1}{8}$	$12\frac{5}{8}$
$\frac{3}{16}$	1.20	.....	$1\frac{3}{4}$	$3\frac{1}{2}$	$1\frac{1}{8}$	5.80	20.50	$6\frac{3}{8}$	$12\frac{3}{4}$
$\frac{7}{32}$	1.30	.....	$1\frac{7}{8}$	$3\frac{3}{4}$	$1\frac{1}{8}$	6.00	20.50	$6\frac{1}{2}$	$12\frac{1}{2}$
$\frac{1}{4}$	1.40	\$3.50	2	4	$1\frac{1}{8}$	6.20	22.25	$6\frac{3}{4}$	$12\frac{3}{8}$
$\frac{9}{32}$	1.45	3.75	$2\frac{1}{8}$	$4\frac{1}{4}$	$1\frac{1}{8}$	6.40	22.25	$6\frac{1}{2}$	13
$\frac{5}{16}$	1.50	3.75	$2\frac{1}{4}$	$4\frac{1}{2}$	$1\frac{1}{8}$	6.60	24.00	$6\frac{1}{2}$	13
$\frac{11}{32}$	1.55	4.25	$2\frac{3}{8}$	$4\frac{3}{4}$	$1\frac{1}{8}$	6.80	24.00	$6\frac{1}{2}$	13
$\frac{3}{8}$	1.60	4.25	$2\frac{1}{2}$	5	$1\frac{1}{8}$	7.00	25.75	$6\frac{1}{2}$	13
$\frac{13}{32}$	1.70	4.75	$2\frac{5}{8}$	$5\frac{1}{4}$	$1\frac{1}{8}$	7.20	25.75	$6\frac{1}{2}$	13
$\frac{7}{16}$	1.75	4.75	$2\frac{3}{4}$	$5\frac{1}{2}$	$1\frac{1}{8}$	7.40	27.50	$6\frac{3}{4}$	$13\frac{1}{2}$
$\frac{15}{32}$	1.85	5.25	$2\frac{7}{8}$	$5\frac{3}{4}$	$1\frac{1}{8}$	7.60	27.50	$6\frac{3}{4}$	$13\frac{1}{2}$
$\frac{1}{2}$	1.90	5.25	3	6	$1\frac{1}{8}$	7.80	29.50	$6\frac{3}{4}$	$13\frac{1}{2}$
$\frac{17}{32}$	1.95	5.75	$3\frac{1}{8}$	$6\frac{1}{4}$	$1\frac{1}{8}$	8.00	29.50	$6\frac{3}{4}$	$13\frac{1}{2}$
$\frac{9}{16}$	2.00	5.75	$3\frac{1}{4}$	$6\frac{1}{2}$	$1\frac{1}{8}$	8.20	31.50	$6\frac{3}{4}$	$13\frac{1}{2}$
$\frac{19}{32}$	2.10	6.25	$3\frac{3}{8}$	$6\frac{3}{4}$	$1\frac{1}{8}$	8.40	31.50	$6\frac{3}{4}$	$13\frac{1}{2}$
$\frac{5}{8}$	2.20	6.25	$3\frac{1}{2}$	7	$1\frac{1}{8}$	8.60	33.50	$6\frac{3}{4}$	$13\frac{1}{2}$
$\frac{21}{32}$	2.30	6.75	$3\frac{3}{4}$	$7\frac{1}{4}$	$1\frac{1}{8}$	8.80	33.50	7	14
$\frac{11}{16}$	2.40	6.75	$3\frac{7}{8}$	$7\frac{1}{2}$	$1\frac{1}{8}$	9.00	35.75	7	14
$\frac{23}{32}$	2.50	7.25	$4\frac{1}{8}$	$8\frac{1}{4}$	$1\frac{1}{8}$	9.20	35.75	7	14
$\frac{3}{4}$	2.60	7.25	$4\frac{1}{4}$	$8\frac{3}{8}$	$1\frac{1}{8}$	9.40	38.00	7	14
$\frac{25}{32}$	2.70	7.75	$4\frac{3}{8}$	$8\frac{3}{4}$	2	9.60	38.00	7	14
$\frac{13}{16}$	2.80	7.75	$4\frac{1}{2}$	$9\frac{1}{8}$	$2\frac{1}{16}$	10.00	40.75	$7\frac{1}{4}$	$14\frac{1}{2}$
$\frac{27}{32}$	2.95	8.50	$4\frac{1}{4}$	$9\frac{3}{8}$	$2\frac{1}{16}$	10.40	43.50	$7\frac{1}{4}$	$14\frac{1}{2}$
$\frac{7}{8}$	3.10	8.50	$4\frac{3}{4}$	$9\frac{1}{2}$	$2\frac{1}{16}$	10.80	46.25	$7\frac{1}{2}$	15
$\frac{29}{32}$	3.25	9.50	$5\frac{1}{8}$	$10\frac{3}{8}$	$2\frac{1}{16}$	11.30	49.00	$7\frac{1}{2}$	15
$\frac{15}{16}$	3.40	9.50	$5\frac{1}{4}$	$10\frac{3}{4}$	$2\frac{1}{16}$	11.80	51.75	$7\frac{1}{2}$	15
$\frac{31}{32}$	3.55	10.50	$5\frac{3}{8}$	$10\frac{1}{2}$	$2\frac{1}{16}$	12.30	55.00	$7\frac{1}{2}$	15
1	3.70	10.50	$5\frac{7}{8}$	$10\frac{7}{8}$	$2\frac{1}{16}$	12.80	58.25	$7\frac{3}{4}$	$15\frac{1}{2}$
$1\frac{1}{32}$	3.85	11.50	$5\frac{1}{2}$	$11\frac{1}{16}$	$2\frac{1}{16}$	13.40	61.50	$7\frac{3}{4}$	$15\frac{1}{2}$
$1\frac{1}{16}$	4.00	11.50	$5\frac{5}{8}$	$11\frac{1}{4}$	$2\frac{1}{16}$	14.00	64.75	$7\frac{3}{4}$	$15\frac{1}{2}$
$1\frac{1}{8}$	4.15	12.75	$5\frac{3}{4}$	$11\frac{7}{16}$	$2\frac{1}{8}$	14.60	68.00	8	16
$1\frac{1}{4}$	4.30	12.75	$5\frac{1}{2}$	$11\frac{5}{8}$	$2\frac{1}{8}$	15.40	71.25	8	16
$1\frac{3}{8}$	4.45	14.25	$5\frac{3}{4}$	$11\frac{1}{2}$	$2\frac{1}{8}$	16.20	74.50	8	16
$1\frac{1}{2}$	4.60	14.25	6	12	$2\frac{1}{8}$	17.00	77.75	$8\frac{1}{4}$	$16\frac{1}{2}$
$1\frac{5}{8}$	4.75	15.75	$6\frac{1}{8}$	$12\frac{1}{8}$	$2\frac{1}{8}$	17.80	81.00	$8\frac{1}{4}$	$16\frac{1}{2}$
$1\frac{3}{4}$	4.90	15.75	$6\frac{1}{4}$	$12\frac{1}{4}$	$2\frac{1}{8}$	18.60	84.25	$8\frac{1}{4}$	$16\frac{1}{2}$
$1\frac{7}{8}$	5.05	17.25	$6\frac{3}{4}$	$12\frac{3}{8}$	3	19.40	87.50	$8\frac{1}{4}$	$16\frac{1}{2}$
2	5.20	17.25	$6\frac{1}{2}$	$12\frac{1}{16}$					

The above furnished in 64th sizes if ordered and take price of the next larger size listed.

Furnished with Spiral Flutes if desired.

FOR DECIMAL EQUIVALENTS, SEE INDEX

SHELL REAMERS



ALWAYS GIVE
FIG. NUMBER
WHEN ORDERING



FLUTED SHELL
CARBON STEEL (Fluted), Fig. 131
HIGH SPEED STEEL (Fluted), Fig. 131A

ROSE SHELL
CARBON STEEL (Rose), Fig. 132
HIGH SPEED STEEL (Rose), Fig. 132A

Diam. in.	Carbon Steel Price each	High Speed Steel Price each	Size Hole	Length Over All in.	Fitting Arbor	Diam. in.	Carbon Steel Price each	High Speed Steel Price each	Size Hole	Length Over All in.	Fitting Arbor
$\frac{1}{4}$	\$1.40	\$3.00	$\frac{1}{4}$	$1\frac{1}{2}$	No. 1	$2\frac{1}{16}$	\$9.80	\$20.50	$1\frac{1}{2}$	4	No. 10
$\frac{5}{16}$	1.40	3.15	$\frac{5}{16}$	$1\frac{1}{2}$		$2\frac{3}{16}$	10.20	21.75	$1\frac{1}{2}$	4	
$\frac{3}{8}$	1.50	3.15	$\frac{3}{8}$	$1\frac{3}{4}$	No. 2	$2\frac{1}{2}$	10.60	23.00	$1\frac{1}{2}$	4	
$\frac{7}{16}$	1.60	3.25	$\frac{7}{16}$	$1\frac{3}{4}$		$2\frac{3}{8}$	11.00	24.25	$1\frac{1}{2}$	4	
$\frac{1}{2}$	1.70	3.25	$\frac{1}{2}$	2	No. 3	$2\frac{1}{2}$	11.40	25.50	$1\frac{1}{2}$	4	
$\frac{5}{8}$	1.80	3.40	$\frac{5}{8}$	2		$2\frac{3}{4}$	11.80	27.00	$1\frac{1}{2}$	4	
$\frac{3}{4}$	1.90	3.55	$\frac{3}{4}$	2	No. 4	$2\frac{3}{4}$	12.20	28.50	$1\frac{1}{2}$	4	
$\frac{7}{8}$	2.00	3.70	$\frac{7}{8}$	$2\frac{1}{4}$		3	12.60	30.00	$1\frac{1}{2}$	4	
$\frac{1}{8}$	2.10	3.85	$\frac{1}{8}$	$2\frac{1}{4}$	No. 5	$3\frac{1}{16}$	13.10	31.50	$1\frac{3}{4}$	$4\frac{1}{2}$	No. 11
$\frac{1}{4}$	2.20	4.00	$\frac{1}{4}$	$2\frac{1}{2}$		$3\frac{1}{8}$	12.60	33.25	$1\frac{3}{4}$	$4\frac{1}{2}$	
$\frac{3}{8}$	2.30	4.25	$\frac{3}{8}$	$2\frac{1}{2}$		$3\frac{1}{4}$	14.10	35.25	$1\frac{3}{4}$	$4\frac{1}{2}$	
$\frac{1}{2}$	2.40	4.50	$\frac{1}{2}$	$2\frac{1}{2}$		$3\frac{1}{2}$	14.60	37.50	$1\frac{3}{4}$	$4\frac{1}{2}$	
1	2.50	4.75	$\frac{1}{2}$	$2\frac{1}{2}$	No. 6	$3\frac{5}{8}$	15.10	40.00	$1\frac{3}{4}$	$4\frac{1}{2}$	
$1\frac{1}{16}$	2.70	5.00	$\frac{1}{2}$	$2\frac{1}{2}$		$3\frac{3}{4}$	15.60	42.50	$1\frac{3}{4}$	$4\frac{1}{2}$	
$1\frac{1}{8}$	2.90	5.25	$\frac{1}{2}$	$2\frac{1}{2}$		$3\frac{7}{8}$	16.10	45.25	$1\frac{3}{4}$	$4\frac{1}{2}$	
$1\frac{1}{4}$	3.10	5.50	$\frac{1}{2}$	$2\frac{1}{2}$		$3\frac{1}{2}$	16.60	48.00	$1\frac{3}{4}$	$4\frac{1}{2}$	
$1\frac{3}{8}$	3.30	5.75	$\frac{1}{2}$	$2\frac{1}{2}$	No. 7	$3\frac{1}{2}$	17.20	50.75	2	5	No. 12
$1\frac{1}{2}$	3.55	6.00	$\frac{1}{2}$	$2\frac{1}{2}$		$3\frac{3}{4}$	17.80	53.50	2	5	
$1\frac{5}{8}$	3.80	6.50	$\frac{1}{2}$	$2\frac{1}{2}$		$3\frac{1}{2}$	18.40	56.50	2	5	
$1\frac{7}{8}$	4.05	7.00	$\frac{1}{2}$	$2\frac{1}{2}$		$3\frac{3}{4}$	19.00	59.50	2	5	
2	4.30	7.50	$\frac{1}{2}$	$2\frac{1}{2}$	No. 8	$3\frac{1}{2}$	19.60	62.75	2	5	
$2\frac{1}{16}$	4.55	8.25	$\frac{1}{2}$	$2\frac{1}{2}$		$3\frac{1}{2}$	20.20	66.00	2	5	
$2\frac{1}{8}$	4.80	9.00	$\frac{1}{2}$	$2\frac{1}{2}$		$3\frac{1}{2}$	20.80	69.25	2	5	
$2\frac{1}{4}$	5.10	9.75	$\frac{1}{2}$	$2\frac{1}{2}$		$3\frac{1}{2}$	21.40	72.50	2	5	
$2\frac{3}{8}$	5.40	10.50	$\frac{1}{2}$	$2\frac{1}{2}$	No. 9	$4\frac{1}{16}$	22.90	79.00	$2\frac{1}{4}$	$5\frac{1}{2}$	No. 13
$2\frac{1}{2}$	5.70	11.25	$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{1}{8}$	24.40	85.70	$2\frac{1}{4}$	$5\frac{1}{2}$	
$2\frac{5}{8}$	6.00	12.00	$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{1}{4}$	25.90	92.00	$2\frac{1}{4}$	$5\frac{1}{2}$	
$2\frac{3}{4}$	6.30	12.75	$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{1}{2}$	27.40	98.50	$2\frac{1}{4}$	$5\frac{1}{2}$	
$2\frac{7}{8}$	6.60	13.50	$\frac{1}{2}$	$2\frac{1}{2}$	No. 10	$4\frac{3}{8}$	29.30	105.00	$2\frac{1}{2}$	6	No. 14
3	6.95	14.25	$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{1}{2}$	31.20	111.50	$2\frac{1}{2}$	6	
$3\frac{1}{16}$	7.30	15.00	$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{3}{4}$	33.10	118.00	$2\frac{1}{2}$	6	
$3\frac{1}{8}$	7.65	15.75	$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{1}{2}$	35.00	125.00	$2\frac{1}{2}$	6	
$3\frac{1}{4}$	8.00	16.50	$\frac{1}{2}$	$2\frac{1}{2}$	No. 11	$4\frac{1}{2}$	37.40	132.50	$2\frac{1}{2}$	6	
$3\frac{3}{8}$	8.35	17.25	$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{3}{4}$	39.80	140.00	$2\frac{1}{2}$	6	
$3\frac{1}{2}$	8.70	18.00	$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{3}{4}$	42.20	147.50	$2\frac{1}{2}$	6	
$3\frac{5}{8}$	9.05	18.75	$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{3}{4}$	44.60	155.00	$2\frac{1}{2}$	6	
$3\frac{7}{8}$	9.40	19.50	$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{3}{4}$	47.60	163.75	$2\frac{3}{4}$	$6\frac{1}{2}$	
4			$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{3}{4}$	50.60	172.50	$2\frac{1}{2}$	6	
			$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{3}{4}$	53.60	181.25	$2\frac{3}{4}$	$6\frac{1}{2}$	
			$\frac{1}{2}$	$2\frac{1}{2}$		$4\frac{3}{4}$	56.60	190.00	$2\frac{3}{4}$	6	

Shell Reamers of any size or lengths made to order.
Furnished with Spiral Flute if desired.
For Decimal Equivalents see index.

BIT STOCK TAPER REAMERS

Taper 1 Inch per Foot



Fig. 136

Diameter		Carbon Steel Price Each	Diameter at Small End, in.	Length of Flute Inches	Length Over All Inches	Diameter		Carbon Steel Price Each	Diameter at Small End, in.	Length of Flute Inches	Length Over All Inches
Nominal	Exact					Nominal	Exact				
1/4	.312	\$0.60	.167	1 3/4	3 3/4	1 1/2	.770	\$1.10	.552	2 3/4	4 3/4
1/8	.375	.60	.219	1 7/8	4	3/4	.833	1.25	.604	2 3/4	4 3/8
3/16	.438	.65	.271	2	4 1/4	1 1/8	.896	1.50	.656	2 3/4	5
1/2	.500	.70	.323	2 1/8	4 1/4	1/2	.958	1.75	.708	3	5 1/2
5/8	.563	.75	.375	2 1/4	4 3/8	1 1/4	1.021	2.00	.760	3 1/4	5 1/4
3/4	.646	.80	.448	2 3/4	4 1/2	1	1.083	2.25	.813	3 1/4	5 3/4
7/8	.708	.95	.500	2 1/2	4 3/8						

TAPER BRIDGE REAMERS WITH SQUARE SHANKS



Fig. 137

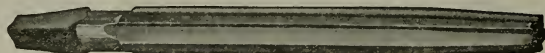


Fig. 137A. With Square Shanks for Ratchet Drill No. 2

These Reamers are especially designed for severe service and particularly adapted for use in structural iron and steel, boiler plate, etc., where precision is not absolutely required.

Diameter Inches			Price Each		Lgth. of Flute Ins.	Lgth. Tapered End Ins.	Lgth. Over All Ins.	Diameter Inches			Price Each		Lgth. of Flute Ins.	Lgth. Tapered End Ins.	Lgth. Over All Ins.
A	B	C	Carbon Steel	High Speed				A	B	C	Carbon Steel	High Speed			
1/4	1/8	3/16	\$2.75	\$3.30	5 1/4	2	7 3/4	1 1/2	3/4	1/2	\$4.25	\$5.30	7 3/4	3	10 1/2
1/2	3/8	1/2	2.90	3.50	5 1/4	2 1/4	7 3/4	1 1/8	1/2	3/8	4.50	5.85	7 3/4	3	10 1/8
5/8	7/8	1 1/8	3.05	3.70	6 1/4	2 1/2	8 3/4	1 1/4	1/2	3/8	4.75	6.40	7 3/4	3	10 1/4
3/4	1	1 1/4	3.20	3.90	6 1/4	3	8 3/4	1 1/4	1/2	3/8	5.00	6.95	7 3/4	3	10 1/2
7/8	1 1/8	1 1/2	3.35	4.10	7 3/4	3	10 1/8	1 1/8	1/2	1/2	5.50	7.50	7 3/4	3	10 1/8
1	1 1/4	1 3/4	3.50	4.40	7 3/4	3	10 3/8	1 1/8	1/2	1/2	6.00	8.25	7 3/4	3	10 1/8
1 1/8	1 3/8	1 7/8	3.75	4.70	7 3/4	3	10 3/8	1 3/8	1/2	1/2	6.50	9.00	7 3/4	3	10 3/8
1 1/4	1 7/8	2	4.00	5.00	7 3/4	3	10 3/8	1 1/2	1/2	1/2	7.00	10.00	7 3/4	3	10 3/8
1 1/2	2	2 1/4			7 3/4	3	10 3/8	1 3/4	1/2	1/2	8.00	11.00	7 3/4	3	10 3/8

TAPER BRIDGE REAMERS

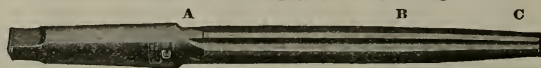


Fig. 139

Diameter Inches			Carbon Steel Price Each	High Speed Steel Price Each	Length of Flute Inches	Length Over All Inches	Taper Shank
A	B	C					
1/4	1/8	3/16	\$2.75	\$4.00	5 1/4	9	No. 2
1/2	3/8	1/2	2.90	4.25	5 1/4	9	
5/8	7/8	1 1/8	3.05	4.50	6 1/4	10	
3/4	1	1 1/4	3.20	4.75	6 1/4	11	
7/8	1 1/8	1 1/2	3.35	5.00	7 3/4	12	No. 3
1	1 1/4	1 3/4	3.50	5.30	7 3/4	12	
1 1/8	1 3/8	1 7/8	3.75	5.70	7 3/4	12	
1 1/4	1 7/8	2	4.00	6.00	7 3/4	12	
1 1/2	2	2 1/4	4.25	6.50	7 3/4	12	No. 4
1 3/4	2 1/8	2 3/4	4.50	7.00	7 3/4	12	
1 7/8	2 3/8	3	4.75	7.50	7 3/4	12	
2	2 7/8	3 1/4	5.00	8.00	7 3/4	12	
2 1/8	3	3 1/2	5.50	8.75	7 3/4	12	No. 5
2 1/4	3 1/8	3 3/4	6.00	9.50	7 3/4	13 1/4	
2 3/8	3 3/8	4	6.50	10.50	7 3/4	13 1/4	
2 1/2	3 7/8	4 1/4	7.00	12.00	7 3/4	13 1/4	
2 3/4	4	4 1/2	8.00	14.00	7 3/4	13 1/4	

We furnish Reamers for pneumatic drills for bridge builders, ship builders and boiler makers. These Reamers furnished with following number of flutes unless otherwise ordered—1/2 inch to 1 inch = 5 flutes, 1 1/8 inch to 1 1/4 inch = 7 flutes, 1 1/4 inch to 1 1/2 inch = 8 flutes.

For decimal equivalents, see Index.

RATCHETS PACKER SLEEVE AND BOILER RATCHETS

Fig. 502A. Sleeve Ratchet
FOR SQUARE SHANK OR TAPER SHANK DRILLS

Fig. 502B. Boiler Ratchet

No.	Length of Handle, In.	Sleeve Ratchets	Boiler Ratchets	No.	Length of Handle, In.	Size of Taper Socket	Each
1	10	\$10.50	\$9.00	2A	12	M. T. No. 2	\$16.00
2	12	13.50	10.50	3A	16	M. T. No. 3	20.00
3	16	16.00	....	4A	17	M. T. No. 4	25.00
4	17	19.00	....			
5	20	23.00	....			

KEYSTONE REVERSIBLE RATCHET Combination No. 200

Consists of Morse Taper Ratchet for Twist Drills, Sleeve for Square Shank Drills, and Short Boiler Socket for Square Shank Drills. Sockets interchangeable.

The Bore of Socket for 10 inch Ratchet is No. 2, Taper taking Drills up to $\frac{3}{8}$ of an inch.

The Bore of Socket for 14 and 16 inch Ratchet is No. 3, Taper taking Drills up to $\frac{1}{4}$ inches.

The Bore of Socket for 18 to 28 inch Ratchet is No. 4, Taper taking Drills up to 2 inches.

The Socket for 10-inch Ratchet takes No. 1 Morse Taper Sleeve.

The Socket for 14 and 16-inch Ratchet takes No. 2 Morse Taper Sleeve.

The Socket for 18 and 28-inch Ratchet takes No. 3 Morse Taper Sleeve.

No. 51. Combination complete with 10 inch handle \$ 7.75

No. 52. Combination complete with 14 inch handle 9.00

No. 53. Combination complete with 16 inch handle 10.00

No. 54. Combination complete with 18 inch handle 11.25

No. 55. Combination complete with 22 inch handle 11.25

No. 56. Combination complete with 24 inch handle 11.75

No. 57. Combination complete with 28 inch handle 12.25

RENSHAW'S RATCHET DRILLS

These Ratchets are made to take the taper shank and also the ordinary square shank drills. By transferring the collet and feed-screw, as arranged for right-hand drilling, to opposite ends of the spindle, the ratchet may be used for left-hand drilling.

No. 1. Length of handles over all, $9\frac{1}{2}$ inches; length from top of spindle to bottom of feed collet, 3 inches; length of feed, $1\frac{1}{2}$ inches.

No. 3. Length of handles over all 18 inches; length from top of spindle to bottom of feed collet, 5 inches; length of feed, $2\frac{1}{2}$ inches.

No. 1 has one collet for drills with bit stocks, and one collet for drills fitting No. 1 Morse's Standard Taper Socket.

Price \$11.00

Less for either collet, if not wanted 1.60

..... 15.00

No. 3 has one collet, No. 5, for drills with square shank of $\frac{1}{2}$ to $1\frac{1}{2}$ inches diameter, and collets Nos. 1, 2 and 3 for Morse's Standard Taper Shanks. No. 3 and No. 5 collets are held in the spindle by screw-thread. No. 1 and No. 2 collets are tapered externally to fit No. 3 socket.

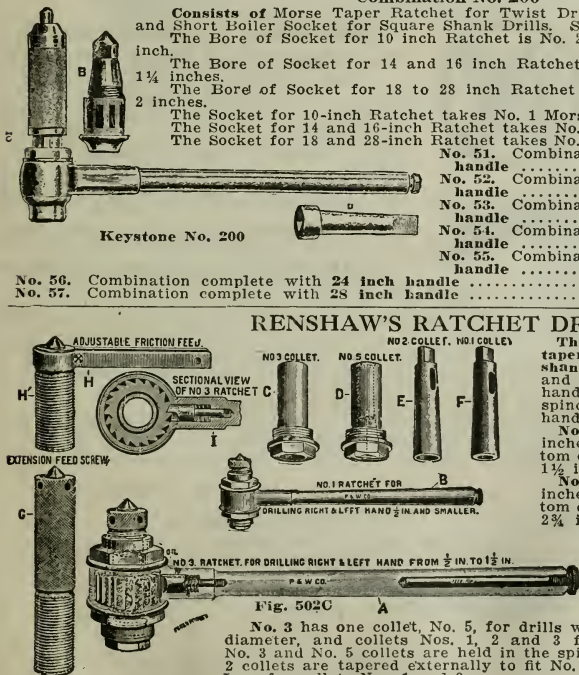
Less for collets Nos. 1 and 2 each \$1.10

Less for collets Nos. 3 and 5 " 1.75

..... 15.00

The No. 3 ratchet, for use of boiler-makers, for whose use it is especially adapted, is provided with an extended feed-screw, having a knurled shank $3\frac{1}{4}$ inches long, by which the ratchet may be held by hand in starting the drill, and fed by hand also. When this extended screw is substituted for the regular one the price is the same; if it is taken as an extra attachment, it is furnished at..... \$3.50

Adjustable friction feed attachment..... extra 4.00



Price, with four collets.....

The No. 3 ratchet, for use of boiler-makers, for whose use it is especially adapted, is provided with an extended feed-screw, having a knurled shank $3\frac{1}{4}$ inches long, by which the ratchet may be held by hand in starting the drill, and fed by hand also. When this extended screw is substituted for the regular one the price is the same; if it is taken as an extra attachment, it is furnished at..... \$3.50

Adjustable friction feed attachment..... extra 4.00

RATCHETS—BENCH SHEARS

KEYSTONE REVERSIBLE

A represents ratchet adjusted, with socket for square shanks. B, boiler makers' socket. C, Morse taper socket. D, square shank sleeve. E, cap for securing socket in holder. F, knob for reversing movement. No drift required for discharging Morse taper drill or sleeve.

SLEEVE RATCHETS

No. 1.	10 in. handle, for Square shanks,	\$5.00; for Morse Taper.....	\$5.25
No. 2.	14 in. handle, for Square Shanks,	5.75; for Morse Taper.....	6.00
No. 3.	16 in. handle, for Square Shanks,	\$6.50; for Morse Taper.....	6.75
No. 4.	18-22 in. handle, for Square Shanks,	\$7.25; for Morse Taper.....	7.50
No. 4.	24 in. handle, for Square Shanks,	for Morse Taper.....	7.75
No. 4.	28 in. handle, for Square Shanks,	for Morse Taper.....	8.25
No. 4.	32 in. handle, for Square Shanks,	for Morse Taper.....	8.50

BOILER RATCHET

SHORT FEED

No. 1.	10 in. handle.....	\$5.00
No. 2.	14 in. handle.....	5.75
No. 3.	16 in. handle.....	6.50
No. 4.	18-22 in. handle.....	7.25
No. 4.	24 in. handle.....	7.75
No. 4.	28 in. handle.....	8.25

Fig. 502D

ARMSTRONG
UNIVERSAL RATCHET DRILL

Two Inches of Motion at End of Handle, in Any Direction, Will Drive the Drill

RATCHET No. 4

Complete, with one Spindle only.....\$12.00

This Ratchet is designed for ordinary work, and is guaranteed for drilling holes up to one inch in diameter. Length, 14 inches. Weight, 4 1/4 lbs.

Extra Spindles for No. 4 ratchet, each.....\$2.40

Style M Spindle, taking No. 1 square taper shank drills with shank 3/8-inch square on small end.

Style B Spindle, taking No. 2 square taper shank drills with shank 1/2 inch square on small end.

Style K Spindle, taking drills with No. 2 Morse taper shanks, up to 3/4 in. diameter.

RATCHET No. 6

Complete, with one Spindle only.....\$18.00
This Ratchet is designed for very heavy work, being guaranteed to drill holes up to two inches in diameter. Length, 18 inches. Weight, 10 1/2 lbs.

Extra Spindles for No. 6 ratchet..... each \$3.60

Style C Spindle, taking No. 1 square taper shank drills with shank 3/8 inch square on small end.

Style F Spindle, taking No. 2 square taper shank drills with shank 1/2 inch square on small end.

Style N Spindle, taking drills with No. 3 Morse taper shanks, up to 1 1/4 inch diameter.

Style S Spindle, taking drills with No. 4 Morse taper shanks, up to 2 inch diameter.

NOTE—Regular Morse Taper Reducing Sleeves can be used in K, N, and Spindles.

When ordering be careful to specify style spindle wanted. Unless otherwise specified we will ship No. 4 Ratchet equipped with M Spindle and No. 6 equipped with C Spindle.



Fig. 00

TINNERS' BENCH SHEARS

Bench Shears, Right-Hand Cut

Bench Shears as regularly made have a right-hand cut; that is, the lower Blade is on the right side of the Shears.

Numbers	Shears	Length of Cut inches	Length Over All inches	Will Cut Iron, No.	Weight, lbs.	Each
00	Bench	11 1/2	46	18	36	\$13.50
0	Bench	10 1/2	42 1/2	18	30	12.00
1	Bench	9	39	18	24	8.00
2	Bench	8 3/4	37	19	19	7.00
3	Bench	7 3/4	31	19	13	6.00
4	Bench	7 3/8	30	20	12	5.00
5	Bench	6 1/4	27	21	9	4.00
6	Bench	5 1/4	25	22	8 1/4	3.50
31	Elbow Bench	4	26	18	9 1/2	5.25
32	Elbow Bench	6	39	16	26	12.00
33	Elbow Bench	7 1/2	46	14	48	25.00

FOR TINNERS' SNIPS AND CRIMPING MACHINES, SEE INDEX

BEAVER EASY-WORKING DIE STOCKS

Beaver Die Stocks use narrow receding chasers—hence are "Easy Workers." Every tool is adjustable and threads four or more sizes of pipe. No dies to change. A self centering chuck does away with the bother of extra bushings. Tools are made from the finest quality of material and are absolutely guaranteed.



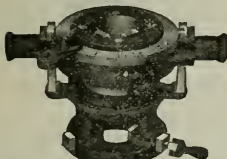
No. 6. Beaverette

No. 6 "BEAVERETTE" $\frac{1}{4}$ to $\frac{3}{4}$ Inch

The Beaverette uses two sets of non-receding dies which are instantly adjusted to thread $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$ or $\frac{3}{4}$ inches pipe by a slight movement of the adjusting handle. The tool is simple, strong, does perfect work and is self-contained. No extra dies or bushings. When desired we can furnish special sets of $\frac{1}{8}$ inch dies to go with the "Beaverette."

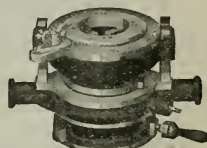
Threads pipe, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$ inches.

Price completeeach \$15.00
Price extra Dies, $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{3}{8}$, or $\frac{1}{2}$ and $\frac{3}{4}$ inch R. or L.per set 3.00



No. 25. Plain
1, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 inch

Numbers 25 and 26 thread 1, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inch without changing dies. The tools are similar in construction with the exception that the No. 26 is designed for ratchet operation and for use in confined quarters, in ditches, etc. Other ways the tools are identical. One set of dies cuts four sizes. Adjustment from one size to the other can be made in 5 seconds by shifting control lever. No slipping—the action is positive. A universal chuck centers the pipe, eliminating bushings. Tools are made of the highest quality of steel and malleable iron and will withstand more than the usual amount of abuse. "Beaver" Tools are absolutely guaranteed.



No. 26. Ratchet
1, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inch

Number
Threads pipe, 1, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inches.
Shipping weight, boxed..... lbs.
Price completeeach
Price extra Dies, right hand..... per set

25 26
1 to 2 in. 1 to 2 in.
25 30
\$30.00 \$35.00
3.50 3.50

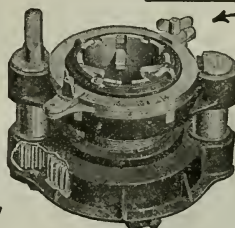
SIZES CHANGED INSTANTLY

BRONZE
BUSHED

DRIVING
PINION
SUPPORTED
BOTH ENDS

DETACHABLE
LEADER
SCREW

STEEL
GEARS
PROTECTED



No. 41. ($2\frac{1}{2}$ to 4 inch)

No. 41. Beaver ($2\frac{1}{2}$ to 4 inch)
No. 61. Beaver ($2\frac{1}{2}$ to 6 inch)
No. 80. Beaver ($4\frac{1}{2}$ to 8 inch)
No. 90. Beaver (9 to 12 inch)

These large "Beaver" Tools are self-contained. Strong construction. Will withstand hardest field use. Large tools are similar to the No. 41 herewith illustrated and have the same advantages. Two sets of dies are contained in the stock and are both controlled by same lever. One man threads steel or wrought iron pipe up to 12 inches perfectly. Every "Beaver" tool guaranteed.

Number 41
Threads Pipe inches
Shipping weight lbs.
Price complete each
Price extra dies..... per set

61 80 90
 $2\frac{1}{2}$ to 4 $2\frac{1}{2}$ to 6 $4\frac{1}{2}$ to 8 9 to 12
100 200 230 300
\$110.00 220.00 300.00 500.00
9.00 14.00 20.00 30.00

BEAVER SQUARE-END PIPE CUTTERS



No. 5 "Beaver" cuts $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inch

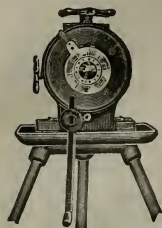
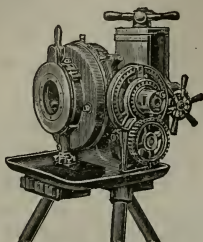
Beaver Square-End Pipe Cutters cut pipe off absolutely square and smooth by means of two specially designed cutting knives automatically fed by powerful coiled springs. Saves reaming and filing to remove burrs. Cannot split the pipe. No. 10 and 15 are ratchet operated. One man cuts any size easily.

Number
Cuts Pipe inches
Price complete each
Price Extra Knives..... per set

1 5 10 15
 $\frac{1}{2}$ to 1 $\frac{1}{2}$ to 2 $2\frac{1}{2}$ to 4 $2\frac{1}{2}$ to 6
\$18.00 20.00 30.00 180.00
1.20 1.50 2.50 5.00

FOR OTHER STYLES OF PIPE STOCKS AND PIPE CUTTERS, SEE INDEX

OSTER STOCKS AND DIES FOR HAND OPERATION

Fig. 201
Front View

Figs. 204 and 206

Figs. 16 and 17
From the FrontFigs. 16 and 17
From the SideOSTER PIPE MACHINES
For Hand Operation

These machines are complete with a self-centering pipe vise. By the movement of the top vise wheel, the pipe is brought central with the dies, assuring straight threads without further attention on the part of the operator. No previous experience is required in cutting a straight and perfect thread in this machine. The dies are opened or closed by the movement of the small lever handle, which you will notice on the top at the front of the machine. By throwing this lever handle the pipe can be removed, without turning back over the finished threads.

No.	Sizes R. Hand inches	Sets of Dies	Price Without Tripod	Extra Dies per Set	Price Tripod Stand
201	1/4 to 2	4	\$ 94.50	\$4.50	\$10.50
204	1 to 4	4	210.00	6.00	15.00
206	1 to 6	6	337.00	7.50	37.50

OSTER GEARED DIE-STOCKS
With Adjustable Centering Chuck

One set of dies threads two sizes of pipe. To change dies simply move the setting plate to the left as far as it will go. The dies can then be inserted or removed through the die-head without removing any part of the machine.

These are portable pipe tools which can be used as a Die-Stock; as a Bench tool; or complete with Tripod Stand. Each tool is strictly a one-man outfit.

These tools have no leading screw; the dies are started with a lever handle. One movement of the lever brings the head to position for the next cut without backing over the finished threads. No pipe vise required.

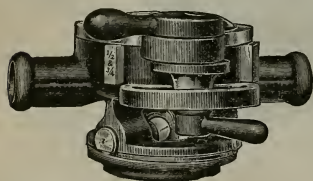
Number	16	17
Threads, pipe	2 1/2 to 4	2 1/2 to 6
Price with bench bracket,	each \$110.00	\$185.00
Price with tripod, complete,	" 125.00	200.00
Price dies per set of four pieces	" 4.00	5.00

OSTER BULLDOG DIE-STOCKS

Every Bulldog Tool has the 5 BIG OSTER FEATURES—(1), self-locking, quick-opening, adjustable dies; (2), self-locking, quick-opening, self-centering guides; (3), three-lever control; (4), no loose bushings or breakable small parts; (5), no running back over newly-cut threads. Built for perfect lubrication and long service.

Bulldog No. 82, 1/4 to 3/4 inch, the "baby" of the line, is entirely self-contained. One set of double-end protected dies thread all four sizes. No loose parts.

Bulldog Ratchet Die-Stocks No. 102R to 105 1/2 R, in addition to all features of above tool, have the easy-pulling ratchet.

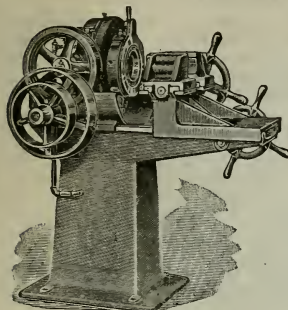


Range of Sizes of Pipe				Regular Stocks		Ratchet Stocks		Extra Dies	Shipping Weight Complete	
One Set	One Set	One Set	One Set	Cat. No.	Price Complete	Catalog Number	Price Complete	Per Set (4 pcs.)	Plain	Ratchet
1/4	1/4 & 3/8	1/2 & 3/4	3/4 to 1	82	\$13.00			\$3.00	10 lbs.	
1/4 & 3/8	1/2 & 3/4	1 & 1 1/4		101	13.00			1.50	11 lbs.	
1 & 1 1/4	1 1/2 & 2			102	17.00	102 R	\$20.00	1.75	20 lbs.	24 lbs.
1 1/2 & 2	1 & 1 1/4	1 1/2 & 2		103	22.00	103 R	27.00	2.00	27 lbs.	34 lbs.
1 1/2 & 3/4	1 1/2 & 3/4	1 & 1 1/4	1 1/2 & 2	104	25.00	104 R	30.00	2.00	29 lbs.	35 lbs.
1 1/2 & 2	2 1/2 & 3			104 1/2	28.00			2.00	30 lbs.	
1 & 1 1/4	1 1/2 & 2	2 1/2 & 3		105	40.00	105 1/2 R	53.00	3.00	62 lbs.	70 lbs.
2 1/2 & 3	3 1/2 & 4			107	55.00	107 R	60.00	3.50	94 lbs.	138 lbs.
1 1/2 & 2	2 1/2 & 3	3 1/2 & 4		107 1/2	58.50	107 1/2 R	63.50	3.50	98 lbs.	142 lbs.
	2 1/2 & 3		4 1/2 & 5			108 R	75.00	5.00		137 lbs.
1 1/2 & 2	2 1/2 & 3	3 1/2 & 4	4 1/2 & 5			108 1/2 R	80.00	5.00		140 lbs.

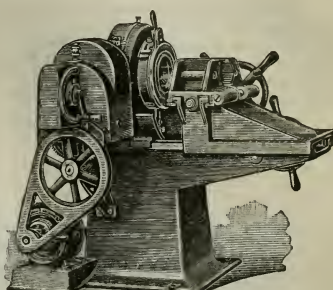
Nos. 105 to 107 1/2, operated with four handles. Nos. 107R to 108 1/2 R, operated with four handles or two handles as a ratchet stock. All tools supplied with dies and handles complete at above prices.

FOR OTHER STYLES OF PIPE STOCKS, SEE INDEX

OSTER POWER PIPE THREADING MACHINES

Fig. 300A to 308A
Belt Driven Model

The Oster two-piece Nipple Jaws are attached to the regular vise on the machine, by means of two bolts. When the vise jaws are opened, the nipple is released from the jaw threads, the same as an ordinary piece of pipe. These jaws are made of steel, hardened, and will hold a close nipple.

Fig. 300B to 308B
Motor Driven Model

These machines perform every one of the many pipe threading jobs in ordinary use—pieces long or short, straight or bent, over or under size, nipples, any length, and all thread nipples.

Every operating part is right under the hand, so that not a moment is wasted in useless action of the operator. Without changing his position, he sees the work of the threading dies at all times. Quick results are given by the lever controlled die head, which is released and reset instantly after the thread is finished. The vise grips the work by a single turn of the wheel, bringing it to an absolute center. All bearings are large and the vise has no chance of getting out of alignment with the center of the dies.

An Automatic Die Release can be added to these machines, designed for cutting all threads equal length. It is recommended where a number of pieces of the same length must be threaded. When adjusted it will automatically open the dies and remove the work from the dies without any attention on the part of the operator. It can be set to cut any length thread desired.

The Oster Fountain Oil Flood pumps an individual stream of oil to each die, constantly, and to all positions underneath of this die, even when in position underneath the pipe. This saves your dies, produces smoother and better threads, prevents splashing the oil all over the machine, and also prevents oil draining inside the pipe.

An unusual feature is the threading of short lengths. No. 300A will handle pieces down to $3\frac{1}{2}$ inches; No. 304A, $4\frac{1}{2}$ inches; No. 306A, $5\frac{1}{2}$ inches, all with the regular equipment.

Number	Size of Pipe	Sets of Dies	Price	Extra Dies, per set (4 Pcs.)	Drive	Nipple Jaws Each Size	Shipping wt., lbs.
300 A	$\frac{1}{4}$ to 2	4	\$ 315.00	\$ 4.50	Belt	\$11.00	1050
304 A	1 to 4	4	475.00	6.00	Belt	11.00	1550
306 A	$1\frac{1}{2}$ to 6	6	660.00	7.50	Belt	15.00	2240
308 A	$2\frac{1}{2}$ to 8	6	1200.00	15.00	Belt		4200
300 B	$\frac{1}{4}$ to 2	4	465.00	4.50	Motor	11.00	1050
304 B	1 to 4	4	700.00	6.00	Motor	11.00	1700
306 B	$1\frac{1}{2}$ to 6	6	925.00	7.50	Motor	15.00	2600
308 B	$2\frac{1}{2}$ to 8	6	1500.00	15.00	Motor		4600

OSTER MATCHLESS DIE-STOCKS

For Hand Operation

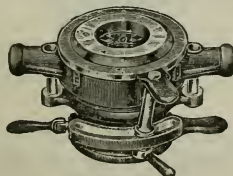
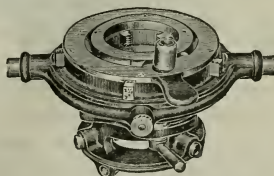


Fig. 3B

No. 3B MATCHLESS EASY-CUTTING STOCK is another self-contained, all-in-one tool with no loose parts. Narrow, receding, easy-cutting, adjustable dies, steel guides and the patented Oster chip shield for the leader screw assures good threads and long wear.

No. 3BR MATCHLESS RATCHET STOCK is similar, but has the added convenience of the ratchet feature. Chips and oil cannot clog the leader screw in either tool.

This new 4BR MATCHLESS RATCHET STOCK

Fig. 4BR
Ratchet Pattern; Top View

is built to meet the demands for a Matchless Stock of greater capacity— $2\frac{1}{2}$ to 4 inches. One man can operate this tool on all sizes of pipe within the range as catalogued.

Number	Sets of Dies	Price	Extra Dies	Shp'g. Wt.
1B $\frac{1}{4}$ to $\frac{3}{4}$ in.....	2	\$14.50	\$1.50	11 lbs.
3B to 1 to 2 in.....	1	30.00	2.00	25 lbs.
3BR (Ratchet) 1 to 2 in....	1	35.00	2.00	36 lbs.
4BR (Ratchet) $2\frac{1}{2}$ to 4 in..	2	80.00	5.00	120 lbs.

FOR OTHER STYLES OF SCREW PLATES, SEE INDEX

"TOLEDO" PIPE THREADING DEVICES

Toledo Pipe Threading Devices are generally acknowledged to be the greatest labor-saving pipe threading tools on the market. Today one man can do the work that formerly required the services of two—and sometimes—four men. Toledo tools eliminate friction at the cutting edge, made possible by the use of very narrow dies, and by mechanically giving these dies a receding motion while cutting a thread. This makes the actual operation of cutting a thread such a simple matter that one man can cut any size thread, even up to 12 inch.

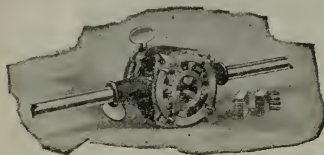


Fig. 0. "Toledo" Adjustable Threading Device No. 0

Capacity $\frac{1}{8}$ inch to $\frac{3}{4}$ inch Pipe Inclusive
Complete with R. H. Dies

This tool is very light and compact; net weight 7 pounds; total length, from tip to tip of the handles, 24 inches.

It differs from every other tool of its capacity in that it embodies the receding-die feature for threading $\frac{1}{8}$ inch and $\frac{3}{8}$ inch pipe, and is the easiest operating tool for these sizes.

One set of dies is used for threading $\frac{1}{8}$ inch pipe, another set for $\frac{1}{4}$ inch and $\frac{3}{8}$ inch pipe, and another for $\frac{1}{2}$ inch and $\frac{3}{4}$ inch pipe.

Left-hand dies can be furnished on special order, but when cutting left-hand threads it requires a separate set for each size pipe.

List price complete.....\$16.00
Extra dies, per single set.....2.50



Fig. 00. "Toledo" Pipe Threader

Capacity $\frac{1}{8}$ to $\frac{3}{4}$ inch Inclusive

The newest thing in pipe threaders for small sizes of pipe. It produces perfectly true tapered threads of standard size. Lay the desired die-head on the ratchet, pull back the pawl and it drops into place. You are then ready to thread your pipe.

This tool can be used in the closest corners. There is nothing else on the market that is nearly so compact as this device, and it threads easily.

If you do not want all the die-heads, buy as many as you want. The dies can be taken from the die-heads and reground several times. When they wear out others can be bought in sets of four segments.

List price, ratchet only.....\$3.00
 $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{3}{8}$ inch die-heads with dies.....each 3.00
 $\frac{1}{2}$ and $\frac{3}{4}$ inch die-heads with dies....." 3.50
New diesper set 2.00
Special case for ratchet and die-heads.....each 1.00

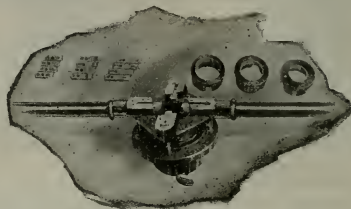


Fig. 1. "Toledo" Adjustable Threading Device No. 1

Capacity 1 inch to 2 inch Pipe Inclusive

This tool is the "standard" among pipe-fitters of long practical experience.

Made either for cutting right-hand or left-hand threads. Neither tool will do both.

List price\$24.00
Extra dies, per single set.....2.50

"Toledo" Adjustable Ratchet Threading Device No. 1A (Not Illustrated)

Capacity 1 inch to 2 inch Pipe Inclusive

This tool is in every essential like the No. 1 except that it is equipped with a ratchet. It may be used with two handles as an ordinary die stock, or with one handle inserted in the ratchet case. It is desirable for threading pipe down in a trench or against walls, between rafters, etc. It is the easiest operating pipe threading tool in existence.

Made either for cutting right-hand or left-hand threads. Neither tool will do both.

List price\$30.00
Extra dies, per single set.....2.50



Fig. 10. "Toledo" Adjustable Threading Device No. 10

Capacity 1 inch to 2 inch Pipe Inclusive

This tool is offered to those desiring a tool threading several sizes of pipe with one set of dies. While we do not believe this the most desirable practice from the standpoint of die service, yet a large number of users would rather buy new dies oftener than change dies for each size of pipe threaded. Left hand dies can be used in this tool and can be furnished on special order. It requires, however, a separate set of left hand dies for each size of pipe.

List price, complete with right hand dies.....\$28.00

TOLEDO PIPE THREADING DEVICES

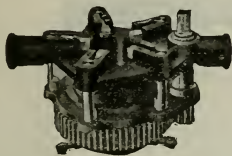


Fig. 2

Fig. 2. "Toledo" Geared Adjustable Threading Device No. 2

Capacity $2\frac{1}{2}$ inch to 4 inch Pipe Inclusive
Complete with Dies, Ratchet and Driving Cross

A light and compact tool, and the most easily operated pipe threading device in existence. Neither is the ease of operation obtained at the expense of speed. A 4 inch thread may be completed in ten minutes without undue effort. A 4 inch thread has been cut in six minutes.

List price\$100.00
Extra dies, per single set..... 8.00

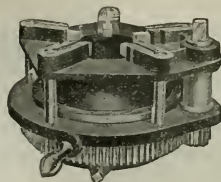


Fig. 3

Fig. 3. "Toledo" Geared Adjustable Threading Device No. 3

Capacity $4\frac{1}{2}$ inch to 8 inch Pipe Inclusive
Complete with Dies, Ratchet and Driving Cross

The lightest and most compact and by far the most easily operated pipe threading device of its capacity in existence. Its net weight is 155 pounds. With clearance in other directions, it may be operated on a pipe the center of which is within 10 inches of a wall or other obstruction.

One man can readily cut an 8 inch thread with same. Ease of operation is not obtained at the expense of speed.

List Price\$300.00
Extra dies, per single set..... 12.00

All Right-Hand Tools are carried in stock for prompt shipment. Left-Hand Tools are shipped direct from factory.

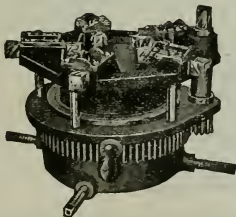


Fig. 25

Fig. 25. "Toledo" Geared Adjustable Threading Device No. 25

Threads $2\frac{1}{2}$ inch to 6 inch Pipe Inclusive
Complete with Dies, Ratchet and Driving Cross

A tool intermediate in size to the No. 2 and No. 3. For those who require to thread pipe a little larger than the No. 2 will handle, yet do not need one as large as the No. 3.

Threads entire range of sizes with one set of dies. An extra set of dies furnished with the tools so a sharp set may always be on hand.

Embodies the die-receding principle; has no cam-plate, is very simple and positive in its action.

One man can thread 6 inch pipe easily.

List Price\$230.00
Extra dies, per single set..... 8.00

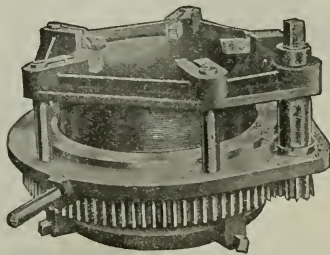


Fig. 4

Fig. 4. "Toledo" Geared Adjustable Threading Device No. 4

Capacity 9 inch, 10 inch and 12 inch Inclusive
Complete with Dies, Ratchet and Driving Cross

The illustration shows the "big fellow" of the line. There is no other apparatus for threading pipe of these sizes that does not weigh a ton or more. The "Toledo" No. 4 weighs 255 pounds. It is strictly portable. May be put on a pipe anywhere and operated. It takes two men to put it on a pipe, but after it is on, one man can cut the thread.

List price\$500.00
Extra dies, per single set..... 20.00

IF YOU WANT TO KNOW WHAT EFFICIENCY IN SERVICE REALLY MEANS, SEND US YOUR NEXT ORDER

PIPE STOCKS PUMP MAKERS' STOCKS AND DIES



Fig. 250

These double stocks are fitted with Little Giant adjustable bolt dies which are held in place by wedges. The wedges have beveled sides which fit the bevel on the dies. Tightening the wedge holds the dies rigidly in place.

No. 250—Cutting sizes, $\frac{3}{8}$ 14, $\frac{1}{2}$ 12, length of stock, 13 $\frac{1}{2}$ inches; net weight, 1 $\frac{1}{2}$ lbs.; price.....each \$3.35

Separate Parts

Stock (including wedge) No. 250 (double).....\$0.85	Dies, size $\frac{1}{2}$ 12.....each \$1.50
Dies, size $\frac{3}{8}$ 14.....each 1.25	Guides....." .20
Dies, size $\frac{1}{2}$ 12.....each 1.25	Wedge for double stock......15



Fig. 250A

FULL-MOUNTED STOCKS FOR RODS AND BOLTS

The die slot in this stock is bevelled to fit Little Giant Dies.

When ordered complete, each die is adjusted with its guide in a separate stock and is ready for use.

Size	Prices of Stocks and Parts				Stock, Die and Guide complete	Size	Prices of Stocks and Parts				Stock, Die and Guide complete
	Stock only	Length of Stock inches	Guide only	Die only			Stock only	Length of Stock inches	Guide only	Die only	
$\frac{1}{8}$	\$0.50	8 $\frac{3}{4}$	\$0.20	\$1.00	\$1.70	$\frac{3}{4}$	\$0.75	25 $\frac{1}{2}$	\$0.20	\$2.00	\$2.95
$\frac{1}{4}$	.50	8 $\frac{3}{4}$	.20	1.00	1.70	$\frac{13}{16}$	1.00	29	.20	2.00	3.20
$\frac{3}{8}$	.50	8 $\frac{3}{4}$	.20	1.00	1.70	$\frac{7}{8}$	1.00	29	.20	2.75	3.95
$\frac{1}{2}$	.50	13 $\frac{1}{2}$	.20	1.25	1.95	$\frac{15}{16}$	1.00	29	.20	2.75	3.95
$\frac{5}{8}$	.75	13 $\frac{1}{2}$	.20	1.25	2.20	1	1.00	29	.20	2.75	3.95
$\frac{3}{4}$	.75	20 $\frac{1}{2}$	.20	1.50	2.45	$1\frac{1}{8}$	1.75	39 $\frac{1}{2}$	.50	4.00	6.25
$\frac{7}{8}$	.75	20 $\frac{1}{2}$	.20	1.50	2.45	$1\frac{1}{4}$	1.75	39 $\frac{1}{2}$	.50	4.00	6.25
$\frac{15}{16}$	.75	25 $\frac{1}{2}$	.20	1.75	2.70	$1\frac{3}{8}$	2.25	50	.50	5.00	7.75
1	.75	25 $\frac{1}{2}$	.20	1.75	2.70	$1\frac{1}{2}$	2.25	50	.50	5.00	7.75

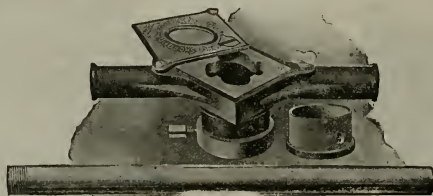


Fig. 490

SQUARE PIPE STOCKS AND DIES

With Square Solid Dies

These Pipe Stocks and Dies are designed to thread cast or wrought iron and steel pipe and are guaranteed to work to Briggs standard.

The Stocks are of malleable iron with nickel plated caps. The handles are of drawn steel tubing with outer ends rounded and welded solid. They are screwed into the stock and are nickel plated. The Dies are of the highest grade tool steel specially treated and tempered and will interchange with all makes of standard solid pipe dies. The material, its careful and uniform treatment and minimum tooth clearance combine to produce a die which will cut with reasonable ease and hold its cutting edges for a long period of time.

While dies with greater clearance may cut more easily at first, they will quickly lose this temporary advantage and becoming dull will break the teeth, lose size and produce a very poor thread.

PRICES EACH

Number	0	1	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2	3	3 $\frac{1}{2}$
Size of Dies.....	$\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$	$\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1	$\frac{3}{4}$, 1, 1 $\frac{1}{4}$	1, 1 $\frac{1}{4}$, 1 $\frac{1}{2}$	1 $\frac{1}{4}$, 1 $\frac{1}{2}$, 2	2 $\frac{1}{4}$, 3	2 $\frac{1}{2}$, 3
Dimensions	2x $\frac{1}{2}$	2 $\frac{3}{4}$ x $\frac{1}{2}$	3x $\frac{3}{4}$	3x $\frac{3}{4}$	3 $\frac{3}{4}$ x $\frac{1}{2}$	4 $\frac{1}{4}$ x 1 $\frac{1}{4}$	4 $\frac{1}{4}$ x 1 $\frac{1}{4}$
Complete	\$9.50	\$15.00	\$13.50	\$13.50	\$20.00	\$43.00	\$51.00
Stock only.....	3.50	5.00	6.00	6.00	9.50	25.00	33.00
Extra Dies.....	1.50	2.00	2.50	2.50	3.50	9.00	9.00
Extra Bushings..	.25	.35	.45	.45	.60	1.00	1.00
Die Frames.....	.....	.30	.40	.40	.50	.60	.60

Stocks Nos. 2, 3 and 3 $\frac{1}{2}$ have leader screw attachment. Stock No. 3 $\frac{1}{2}$ is provided with four handles.

SCREW PLATES

THE GREEN RIVER SCREW PLATES FOR BOLTS



Fig. 152

Diameter of Dies in this set, $\frac{7}{16}$ in.

Set No. 152, $\frac{1}{8}$ to $\frac{1}{4}$ in. Stock 10 in. long, with both Stock and Brace Holder for Dies. 7 sizes $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{1}{2}$ in. Taps, Dies and Guides.

Complete, in case.....\$7.00



Fig. 2029

Diameter of Dies in this set, $2\frac{1}{4}$ in.

Set No. 2029, $\frac{1}{4}$ to $\frac{1}{2}$ in. Stock 18 in. long. 5 sizes, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{2}$ in. Taps, Dies and Guides.

Complete, in case.....\$10.75



Fig. 1124

Diameter of Dies in this set, $2\frac{1}{4}$ in.

Set No. 1124, $\frac{1}{4}$ to $\frac{3}{4}$ in. Stock 22 in. long. 7 sizes, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ in. Taps, Dies and Guides.

Complete, in case.....\$11.25



Fig. 1104

Set No. 1104, $\frac{1}{4}$ to $\frac{3}{4}$ in., with Adjustable Tap Wrench No. 53. 7 sizes, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ in. Taps, Dies and Guides. Stock 22 in. long.

Complete, in case.....\$14.00

Set No. 1125, with extra $\frac{1}{8}$ in. Tap, Die and Guide.....16.25

NOTE—WILL SEND ABOVE SETS $\frac{1}{32}$ OVERSIZE, V THREAD, UNLESS OTHERWISE ORDERED



Fig. 1108

Diameter of Dies in this set, $2\frac{1}{4}$ in.

Set No. 1108, $\frac{1}{2}$ to 1 in. Stock 29 in. long. 5 sizes, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, 1 in. Taps, Dies and Guides.

Complete, in case.....\$16.75

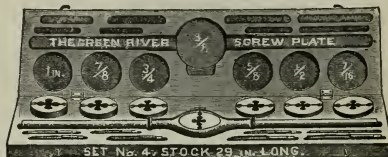


Fig. 1110

Diameter of Dies in this set, $2\frac{1}{4}$ in.

Set No. 1110, $\frac{3}{8}$ to 1 in. Stock 29 in. long. 7 sizes, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{5}{8}$, 1 in. Taps, Dies and Guides.

Complete, in case.....\$21.00

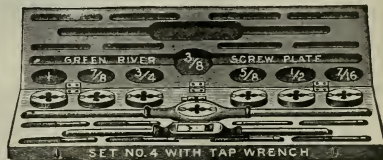


Fig. 1112

Set No. 1112, $\frac{1}{4}$ to 1 in., with Adjustable Tap Wrench No. 54. 9 sizes $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{1}{2}$, 1 in. Taps, Dies and Guides. Stock 29 in. long.

Complete, in case.....\$24.00



Fig. 1119

Set No. 1119. 11 sizes, $\frac{1}{4}$, 20 , $\frac{1}{8}$, $\frac{3}{16}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{13}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$, $\frac{10}{16}$, $\frac{7}{8}$, $\frac{1}{2}$, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$ in. Taper Tap; Dies and Guides $2\frac{1}{16}$ in. outside diameter for sizes $\frac{7}{16}$ in. and smaller and $2\frac{3}{4}$ in. for sizes $\frac{1}{2}$ in. and larger; 2 stocks, No. 1802 (18 in. long) and No. 1806 (35 in. long); adjustable tap wrenches No. (11 $\frac{1}{2}$ in. long), and No. 7 $\frac{1}{2}$ (31 in. long).

Complete, in case.....\$40.00

EXTRA PARTS FOR GREEN RIVER SCREW PLATES

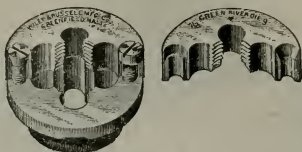


Fig. 495

The cut above shows a Die and Guide taken apart to show the mechanism.

Prices of Parts of Green River Screw Plates Nos. 1 to 25

Sizes	Dies	Guides	No. of Threads	Sizes	Dies	Guides	No. of Threads
$\frac{1}{8}$	\$1.25	\$0.25	*24	$\frac{3}{4}$	\$2.00	\$0.25	*10, 12
$\frac{1}{4}$	1.25	.25	16, 18, *20	$1\frac{1}{8}$	2.25	.25	*10
$\frac{5}{16}$	1.25	.25	16, *18	$\frac{7}{8}$	2.50	.25	*9, 10
$\frac{3}{8}$	1.50	.25	14, *16, 18	$1\frac{1}{4}$	2.75	.25	*9
$\frac{7}{16}$	1.50	.25	12, *14, 16	1	3.00	.25	*8
$\frac{1}{2}$	1.50	.25	*12, 13, 14	$1\frac{1}{8}$	3.50	.25	*7, 8
$\frac{9}{16}$	1.60	.25	*12, 14	$1\frac{1}{4}$	4.00	.25	*7
$\frac{5}{8}$	1.75	.25	10, *11, 12	$1\frac{3}{8}$	4.50	.25	*6
$1\frac{1}{8}$	1.90	.25	*11, 12	$1\frac{1}{2}$	5.00	.25	*6

These Dies and Taps will be sent 1/32 oversize (for rough iron) with threads indicated by *, V form, unless otherwise ordered.

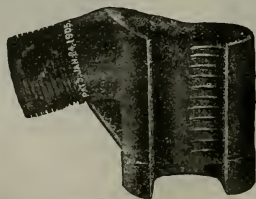
ARMSTRONG'S ADJUSTABLE STOCK AND PIPE DIES



Fig. 490D

No.	Thread inches	Complete Right or Left	Complete Right and Left	Extra Parts				
				Dies each	Bushings each	Thumb Screws each	Adjusting Screws each	Collar Screws each
1	$\frac{1}{8}$ to $\frac{1}{2}$	\$9.00	\$14.00	\$1.25	\$0.20	\$0.10	\$0.10	\$0.12
2	$\frac{1}{4}$ to 1	12.00	20.00	1.50	.25	.10	.10	.12
2 1/2	$\frac{1}{2}$ to $1\frac{1}{4}$	12.00	18.00	3.00	.40	.10	.10	.15
3	$1\frac{1}{4}$ to 2	20.00	.....	4.00	.50	.....	.....	.15
6	$2\frac{1}{2}$ to 3	40.00	.....	15.00	1.00	.....	.....	.25
7	$2\frac{1}{2}$ to 4	60.00	.....	16.00	1.50	.....	.....	.25

HICKEYS OR ROD BENDERS



For Bending Reinforcing Bars That Are Already Laid in the Forms

We manufacture these in sizes ranging from $\frac{1}{4}$ inch to $1\frac{1}{4}$ inches, inclusive, each being made to withstand the strain of the rod for which it is intended. Furnished complete with handles. Prices upon receipt of quantity and specifications.

FOR COMPLETE LINE OF ROD BENDERS AND CUTTERS, SEE INDEX

"RELIABLE" SCREW PLATES**THIS CUT ILLUSTRATES
NEW HEXAGON SHAPED GUIDE**

Which We Are Now Furnishing with All
"RELIABLE" Screw Plates

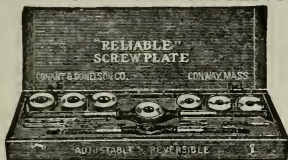


This guide can be turned in or out of the cap with an ordinary monkey wrench.

It will save trouble in adjusting the die. Simply hold the collet in the stock and turn the guide with a wrench.

It is also very useful in places where an ordinary stock cannot be used, in dressing over bruised threads or threading new

work, as with this guide the dies can be turned on with a wrench.

LIST OF ASSORTMENTS**SINGLE-STOCKED**

No.	Length of Stocks inches	Capacity, inches	Price per set
20	*15	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{3}{4}$	\$12.00
21	*23	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{3}{4}$	13.50
22	*23	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$	14.75
23	*26	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{3}{4}$	15.00
24	*26	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{3}{4}$	17.50
25	*26	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{3}{4}$	16.00
26	*26	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{3}{4}$	17.50
27	*27	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$	18.50
28	*26	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{3}{4}$	22.00
29	*26	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1.....	25.50
29A	*26	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1.....	28.00
42	52	$1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$, and $1\frac{3}{4}$	39.50

DOUBLED-STOCKED

No.	Length of Stocks inches	Capacity, inches	Price per set
35	*15 and 23	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$	\$18.00
37	*15 and 23	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$	20.50
39	*15 and 26	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1.....	27.50
39A	*15 and 26	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1.....	30.00
40	26 and 40	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $1\frac{1}{8}$, and $1\frac{1}{4}$	35.00
41	26 and 52	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $1\frac{1}{8}$, $1\frac{1}{4}$, and $1\frac{1}{2}$	45.00
43	26 and 40	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1.....	40.00
44	26 and 52	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1.....	60.00

TRIPLE-STOCKED

No.	Length of Stocks inches	Capacity, inches	Price per set
343	*15, 26 and 40	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1.....	\$42.00
344	*15, 26 and 52	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, and 1.....	62.00

*All assortments having a 15 inch stock include a handy Bit Brace Die Holder for use in threading Clip Bolts on wagons and automobiles without removing them from their places, also for other work where an ordinary stock cannot be used.

When ordering always specify the style of thread, whether "V" exact or oversize, or U. S. Standard.



All "Reliable" Screw Plates are fitted with dies that can be turned over in the collets; this enables you to use them for any purpose that a die can be used, hand work, machine work, cutting close to a bolt head or shoulder, cutting threads on short bolts that are not long enough to reach through the guide or follower; and then our handy bit brace feature enables you to use them in any ordinary bit brace, so you can dress over threads in many places where you cannot use an ordinary stock.

FULL STOCKED LIST OF ASSORTMENTS

No.	Capacity, inches	Price per set
0	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, and $\frac{3}{4}$	\$12.00
1	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$	15.50
2	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$	16.75
3	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, and 1.....	17.00
4	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, and 1.....	19.50
5	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$	18.00
6	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$	18.50
7	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$	20.50
8	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, and 1.....	24.00
9	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, and 1.....	29.50
9A	$\frac{1}{4}$, $\frac{1}{8}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, and 1.....	32.00

When ordering always specify style of thread desired whether "V" exact or oversize or U. S. standard.

PRICE LIST OF PARTS

Size	Reg. No. Threads to inch	Size of Collets	Price of Taps	Price of Dies	Price of Collets	Price of Dies and Collets
$\frac{1}{8}$	24	2 & 2 3/4	\$0.35	\$1.00	\$0.50	\$1.50
$\frac{1}{4}$	20	2 & 2 3/4	.45	1.00	.50	1.50
$\frac{3}{8}$	18	2 & 2 3/4	.50	1.00	.50	1.50
$\frac{1}{2}$	16	2 & 2 3/4	.55	1.25	.50	1.75
$\frac{3}{4}$	14	2 & 2 3/4	.60	1.25	.50	1.75
$1\frac{1}{8}$	12	2 & 2 3/4	.70	1.50	.50	2.00
$1\frac{1}{4}$	12	2 3/4	.80	1.50	.50	2.00
$1\frac{1}{2}$	11	2 3/4	.90	1.75	.50	2.25
$1\frac{3}{4}$	11	2 3/4	1.05	1.75	.50	2.25
2	10	2 3/4	1.20	2.00	.50	2.50
$2\frac{1}{8}$	10	2 3/4	1.40	2.00	.50	2.50
$2\frac{1}{4}$	9	2 3/4	1.60	2.75	.50	3.25
$2\frac{3}{8}$	9	2 3/4	1.80	2.75	.50	3.25
$2\frac{1}{2}$	8	2 3/4	2.00	2.75	.50	3.25
$2\frac{3}{4}$	7	4	2.25	4.00	1.50	5.50
3	7	4	2.60	4.00	1.50	5.50
$3\frac{1}{8}$	6	4	3.00	5.00	1.50	6.50
$3\frac{1}{4}$	6	4	3.50	5.00	1.50	6.50

TAPS—DIES—COLLETS

BIT BRACE DIES AND COLLETS

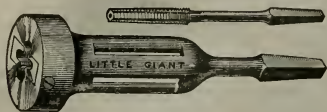


Fig. 858

Bit Brace Dies and Collets are very convenient for redressing threads or working in close quarters where it would be impossible to use a screw plate.

United States Standard threads recommended and furnished unless otherwise ordered.

Sizes and pitches not listed are special.

Left-hand threads are special.

Size	Threads per in.		Tap only	Die only	Collet only	Tap, Die and Collet
	U. S. Std.	V.				
$\frac{3}{8}$	30	24	\$0.50	\$1.00	\$0.65	\$1.90
$\frac{1}{4}$	20	20	.50	1.00	.65	1.90
$\frac{1}{2}$	18	18	.55	1.00	.65	1.95
$\frac{3}{4}$	16	16	.60	1.25	.65	2.25
$\frac{1}{2}$	..	14	.60	1.25	.65	2.25
$\frac{3}{4}$	14	14	.70	1.25	.65	2.35
$\frac{1}{2}$	..	12	.70	1.25	.65	2.35

*Special to order only.

LITTLE GIANT PARTS

List of Taps, Dies and Collets

Diam. inches	Regular Number of "V" Threads per inch	Price of Tap	Price of Die	Price of Collet Plates Nos. 1 to 9	Price of Collet Plates Nos. 20 to 50
$\frac{3}{8}$	24	\$0.35	\$1.00	\$0.50	....
$\frac{1}{4}$	20	.45	1.00	.50	....
$\frac{1}{2}$	18	.50	1.00	.50	....
$\frac{3}{4}$	16	.55	1.25	.50	....
$\frac{1}{2}$	14	.60	1.25	.50	....
$\frac{1}{2}$	12	.70	1.50	.50	....
$\frac{1}{2}$	12	.80	1.50	.50	....
$\frac{1}{2}$	11	.90	1.75	.50	\$1.50
$\frac{1}{2}$	11	1.05	1.75	.50	1.50
$\frac{1}{2}$	10	1.20	2.00	.50	1.50
$\frac{1}{2}$	10	1.40	2.00	.50	1.50
$\frac{1}{2}$	9	1.60	2.75	.50	1.50
$\frac{1}{2}$	9	1.80	2.75	.50	1.50
1	8	2.00	2.75	.50	1.50
$1\frac{1}{8}$	7	2.25	4.00	....	1.50
$1\frac{1}{4}$	7	2.60	4.00	....	1.50
$1\frac{1}{2}$	6	3.00	5.00	....	1.50
$1\frac{1}{2}$	6	3.50	5.00	....	1.50

LIST OF

EXTRA STOCKS



Fig. 497

Stock $7\frac{1}{2}$ in. long for collets $1\frac{1}{4}$ " diam..	\$0.70	Stock 26 in. long for collets $2\frac{3}{4}$ " diam....	\$2.00
Stock $13\frac{1}{2}$ in. long for collets $1\frac{1}{2}$ " diam..	1.25	Stock 29 in. long for collets $2\frac{3}{4}$ " diam....	2.00
Stock $14\frac{1}{2}$ in. long for collets 2" diam..	1.50	Stock 40 in. long for collets 4" diam....	6.00
Stock 23 in. long for collets $2\frac{3}{4}$ " diam..	2.00	Stock 52 in. long for collets $4\frac{1}{2}$ " diam....	8.00

When ordering give number which you wish stocks for.

ADJUSTABLE TAP WRENCHES



These Adjustable Tap Wrenches will hold both Hand and Pipe Taps. Adjustment is obtained by revolving one of the handles. The jaws are made of fine tool steel, are rigidly held in place, and give a tight, strong grip.

Sizes No. 7 and smaller are made from drop forgings. The body parts of larger sizes are malleable castings, with handles of electrically welded steel tubing, light and very strong. The bodies of all wrenches have a neat mottled finish.

No.	Capacity (Tap Sizes)			Full Length inches	Weight	Price
	Hand Inclusive inches	Machine Screw Inclusive	Pipe Inclusive inches			
00	.. to $\frac{1}{8}$	0 to 13	.....	$5\frac{1}{2}$	$1\frac{1}{2}$ oz.	\$1.25
0	$\frac{1}{8}$ to $\frac{1}{4}$	0 to 18	.....	$7\frac{1}{2}$	4 oz.	1.50
4	$\frac{1}{8}$ to $\frac{3}{8}$	0 to 24	.....	9	7 oz.	1.75
6	$\frac{1}{4}$ to $\frac{1}{2}$	8 to 30	$\frac{1}{4}$ to $\frac{1}{4}$	$11\frac{1}{2}$	12 oz.	2.00
6	$\frac{1}{4}$ to $\frac{3}{8}$	8 to 30	$\frac{1}{4}$ to $\frac{3}{8}$	15	2 lbs.	2.50
7	$\frac{3}{8}$ to 1	15 to 30	$\frac{1}{4}$ to $\frac{3}{8}$	$19\frac{1}{2}$	$3\frac{3}{4}$ lbs.	3.50
$7\frac{1}{2}$	$\frac{3}{8}$ to $1\frac{1}{4}$	22 to 30	$\frac{1}{4}$ to $\frac{3}{8}$	31	$4\frac{1}{2}$ lbs.	6.50
8	$\frac{3}{4}$ to $1\frac{1}{2}$	.....	$\frac{3}{8}$ to 1	$40\frac{1}{2}$	8 lbs.	8.00
20	$\frac{1}{2}$ to $1\frac{1}{2}$	.....	$\frac{1}{2}$ to $1\frac{1}{4}$	$40\frac{1}{2}$	8 lbs.	7.00
22	1 and over	.....	1 to 2	$55\frac{1}{2}$	12 lbs.	15.00
24	$1\frac{1}{4}$ and over	.....	2 to 4	74	25 lbs.	25.00

SOLID HEXAGON DIES FOR BOLTS



Fig. S56A

These dies are used principally for repair work, and for dressing over bruised or rusty threads, and will go into any space that hexagon nuts will go into.

They can be used in bit-brace sockets, ratchet or monkey wrenches, and will be found convenient in many ways.

They are accurate, durable and will give satisfactory service.

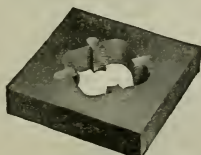
United States Standard threads recommended and furnished unless otherwise ordered.

V exact and V oversize threads furnished to order at regular prices.

Size	Threads per Inch				Size of Die		Price each
	U. S. Standard	S. A. E. Standard	Whit. Standard	V	Across Flats	Thick-ness	
1/4	20	28	20	20	1 1/8	1/4	\$0.30
5/16	18	24	18	18	1 1/8	5/16	.40
3/8	16	24	16	16	1 1/8	3/8	.50
7/16	14	20	14	14	1 1/8	7/16	.60
1/2	13	20	12	12	1 1/8	1/2	.70
5/8	12	18	12	12	1 1/8	5/8	.80
3/4	11	18	11	11	1 1/8	3/4	.90
7/8	11	16	11	11	1 1/8	7/8	.95
1	10	16	10	10	1 1/8	1	1.00
1 1/8	9	14	9	9	1 1/8	1 1/8	1.10
1 1/4	8	14	8	..	1 1/8	1	1.20
1 1/2	7	12	7	..	2	1	1.40
1 3/4	7	12	7	..	2 1/8	1	1.60
2	6	12	6	..	2 3/8	1	1.80
2 1/2	6	12	6	..	2 7/8	1	2.00

DIES

MACHINE OR SOLID BOLT
FOR BOLTS



No. S56B

Size	Number of Threads	Size of Square	Thick-ness	Price
1/4	16, 18, *20	2 1/4	1/2	\$1.80
5/16	16, *18	2 1/4	1/2	1.80
3/8	14, *16, 18	2 1/4	1/2	1.80
7/16	12, *14, 16	2 1/4	3/4	1.80
1/2	*12, 13, 14	2 1/4	3/4	1.80
5/8	*12, 14	2 1/4	3/4	1.90
3/4	10, *11, 12	2 1/4	3/4	2.00
7/8	*11, 12	2 1/4	3/4	2.15
1	*10, 12	2 1/4	3/4	2.25
1 1/8	*9, 10, 12	2 1/4	3/4	2.30
1 1/4	*8, 12	2 1/4	3/4	2.40
1 1/2	*7, 8	2 1/4	3/4	2.55
1 3/4	*6, 10, 12	2 1/4	3/4	2.70
2	*5, 12	2 1/4	3/4	3.00
2 1/4	*4, 12	2 1/4	3/4	3.30
2 1/2	*3, 12	2 1/4	3/4	3.60
2 3/4	*2, 12	2 1/4	3/4	3.90
3	*1, 12	2 1/4	3/4	4.20
3 1/4	*1, 12	2 1/4	3/4	4.40
3 1/2	*1, 12	2 1/4	3/4	4.60
3 3/4	*1, 12	2 1/4	3/4	4.80
4	*1, 12	2 1/4	3/4	5.00
4 1/4	*1, 12	2 1/4	3/4	5.20
4 1/2	*1, 12	2 1/4	3/4	5.40
4 3/4	*1, 12	2 1/4	3/4	5.60
5	*1, 12	2 1/4	3/4	5.80
5 1/4	*1, 12	2 1/4	3/4	6.00
5 1/2	*1, 12	2 1/4	3/4	6.20
5 3/4	*1, 12	2 1/4	3/4	6.40
6	*1, 12	2 1/4	3/4	6.60
6 1/4	*1, 12	2 1/4	3/4	6.80
6 1/2	*1, 12	2 1/4	3/4	7.00
6 3/4	*1, 12	2 1/4	3/4	7.20
7	*1, 12	2 1/4	3/4	7.40
7 1/4	*1, 12	2 1/4	3/4	7.60
7 1/2	*1, 12	2 1/4	3/4	7.80
7 3/4	*1, 12	2 1/4	3/4	8.00
8	*1, 12	2 1/4	3/4	8.20
8 1/4	*1, 12	2 1/4	3/4	8.40
8 1/2	*1, 12	2 1/4	3/4	8.60
8 3/4	*1, 12	2 1/4	3/4	8.80
9	*1, 12	2 1/4	3/4	9.00
9 1/4	*1, 12	2 1/4	3/4	9.20
9 1/2	*1, 12	2 1/4	3/4	9.40
9 3/4	*1, 12	2 1/4	3/4	9.60
10	*1, 12	2 1/4	3/4	9.80
10 1/4	*1, 12	2 1/4	3/4	10.00
10 1/2	*1, 12	2 1/4	3/4	10.20
10 3/4	*1, 12	2 1/4	3/4	10.40
11	*1, 12	2 1/4	3/4	10.60
11 1/4	*1, 12	2 1/4	3/4	10.80
11 1/2	*1, 12	2 1/4	3/4	11.00
11 3/4	*1, 12	2 1/4	3/4	11.20
12	*1, 12	2 1/4	3/4	11.40
12 1/4	*1, 12	2 1/4	3/4	11.60
12 1/2	*1, 12	2 1/4	3/4	11.80
12 3/4	*1, 12	2 1/4	3/4	12.00
13	*1, 12	2 1/4	3/4	12.20
13 1/4	*1, 12	2 1/4	3/4	12.40
13 1/2	*1, 12	2 1/4	3/4	12.60
13 3/4	*1, 12	2 1/4	3/4	12.80
14	*1, 12	2 1/4	3/4	13.00
14 1/4	*1, 12	2 1/4	3/4	13.20
14 1/2	*1, 12	2 1/4	3/4	13.40
14 3/4	*1, 12	2 1/4	3/4	13.60
15	*1, 12	2 1/4	3/4	13.80
15 1/4	*1, 12	2 1/4	3/4	14.00
15 1/2	*1, 12	2 1/4	3/4	14.20
15 3/4	*1, 12	2 1/4	3/4	14.40
16	*1, 12	2 1/4	3/4	14.60
16 1/4	*1, 12	2 1/4	3/4	14.80
16 1/2	*1, 12	2 1/4	3/4	15.00
16 3/4	*1, 12	2 1/4	3/4	15.20
17	*1, 12	2 1/4	3/4	15.40
17 1/4	*1, 12	2 1/4	3/4	15.60
17 1/2	*1, 12	2 1/4	3/4	15.80
17 3/4	*1, 12	2 1/4	3/4	16.00
18	*1, 12	2 1/4	3/4	16.20
18 1/4	*1, 12	2 1/4	3/4	16.40
18 1/2	*1, 12	2 1/4	3/4	16.60
18 3/4	*1, 12	2 1/4	3/4	16.80
19	*1, 12	2 1/4	3/4	17.00
19 1/4	*1, 12	2 1/4	3/4	17.20
19 1/2	*1, 12	2 1/4	3/4	17.40
19 3/4	*1, 12	2 1/4	3/4	17.60
20	*1, 12	2 1/4	3/4	17.80
20 1/4	*1, 12	2 1/4	3/4	18.00
20 1/2	*1, 12	2 1/4	3/4	18.20
20 3/4	*1, 12	2 1/4	3/4	18.40
21	*1, 12	2 1/4	3/4	18.60
21 1/4	*1, 12	2 1/4	3/4	18.80
21 1/2	*1, 12	2 1/4	3/4	19.00
21 3/4	*1, 12	2 1/4	3/4	19.20
22	*1, 12	2 1/4	3/4	19.40
22 1/4	*1, 12	2 1/4	3/4	19.60
22 1/2	*1, 12	2 1/4	3/4	19.80
22 3/4	*1, 12	2 1/4	3/4	20.00
23	*1, 12	2 1/4	3/4	20.20
23 1/4	*1, 12	2 1/4	3/4	20.40
23 1/2	*1, 12	2 1/4	3/4	20.60
23 3/4	*1, 12	2 1/4	3/4	20.80
24	*1, 12	2 1/4	3/4	21.00
24 1/4	*1, 12	2 1/4	3/4	21.20
24 1/2	*1, 12	2 1/4	3/4	21.40
24 3/4	*1, 12	2 1/4	3/4	21.60
25	*1, 12	2 1/4	3/4	21.80
25 1/4	*1, 12	2 1/4	3/4	22.00
25 1/2	*1, 12	2 1/4	3/4	22.20
25 3/4	*1, 12	2 1/4	3/4	22.40
26	*1, 12	2 1/4	3/4	22.60
26 1/4	*1, 12	2 1/4	3/4	22.80
26 1/2	*1, 12	2 1/4	3/4	23.00
26 3/4	*1, 12	2 1/4	3/4	23.20
27	*1, 12	2 1/4	3/4	23.40
27 1/4	*1, 12	2 1/4	3/4	23.60
27 1/2	*1, 12	2 1/4	3/4	23.80
27 3/4	*1, 12	2 1/4	3/4	24.00
28	*1, 12	2 1/4	3/4	24.20
28 1/4	*1, 12	2 1/4	3/4	24.40
28 1/2	*1, 12	2 1/4	3/4	24.60
28 3/4	*1, 12	2 1/4	3/4	24.80
29	*1, 12	2 1/4	3/4	25.00
29 1/4	*1, 12	2 1/4	3/4	25.20
29 1/2	*1, 12	2 1/4	3/4	25.40
29 3/4	*1, 12	2 1/4	3/4	25.60
30	*1, 12	2 1/4	3/4	25.80
30 1/4	*1, 12	2 1/4	3/4	26.00
30 1/2	*1, 12	2 1/4	3/4	26.20
30 3/4	*1, 12	2 1/4	3/4	26.40
31	*1, 12	2 1/4	3/4	26.60
31 1/4	*1, 12	2 1/4	3/4	26.80
31 1/2	*1, 12	2 1/4	3/4	27.00
31 3/4	*1, 12	2 1/4	3/4	27.20
32	*1, 12	2 1/4	3/4	27.40
32 1/4	*1, 12	2 1/4	3/4	27.60
32 1/2	*1, 12	2 1/4	3/4	27.80
32 3/4	*1, 12	2 1/4	3/4	28.00
33	*1, 12	2 1/4	3/4	28.20
33 1/4	*1, 12	2 1/4	3/4	28.40
33 1/2	*1, 12	2 1/4	3/4	28.60
33 3/4	*1, 12	2 1/4	3/4	28.80
34	*1, 12	2 1/4	3/4	29.00
34 1/4	*1, 12	2 1/4	3/4	29.20
34 1/2	*1, 12	2 1/4	3/4	29.40
34 3/4	*1, 12	2 1/4	3/4	29.60
35	*1, 12	2 1/4	3/4	29.80
35 1/4	*1, 12	2 1/4	3/4	30.00
35 1/2	*1, 12	2 1/4	3/4	30.20
35 3/4	*1, 12	2 1/4	3/4	30.40
36	*1, 12	2 1/4	3/4	30.60
36 1/4	*1, 12	2 1/4	3/4	30.80
36 1/2	*1, 12	2 1/4	3/4	31.00
36 3/4	*1, 12	2 1/4	3/4	31.20
37	*1, 12	2 1/4	3/4	31.40
37 1/4	*1, 12	2 1/4	3/4	31.60
37 1/2	*1, 12	2 1/4	3/4	31.80
37 3/4	*1, 12	2 1/4	3/4	32.00
38	*1, 12	2 1/4	3/4	32.20
38 1/4	*1, 12	2 1/4	3/4	32.40
38 1/2	*1, 12	2 1/4	3/4	32.60
38 3/4	*1, 12	2 1/4	3/4	32.80
39	*1, 12	2 1/4	3/4	33.00
39 1/4	*1, 12	2 1/4	3/4	33.20
39 1/2	*1, 12	2 1/4	3/4	33.40
39 3/4	*1, 12	2 1/4	3/4	33.60
40	*1, 12	2 1/4	3/4	33.80
40 1/4	*1, 12	2 1/4	3/4	34.00
40 1/2	*1, 12	2 1/4	3/4	34.20
40 3/4	*1, 12	2 1/4	3/4	34.40
41	*1, 12	2 1/4	3/4	34.60
41 1/4	*1, 12	2 1/4	3/4	34.80
41 1/2	*1, 12	2 1/4	3/4	35.00
41 3/4	*1, 12	2 1/4	3/4	35.20
42	*1, 12	2 1/4	3/4	35.40
42 1/4	*1, 12	2 1/4	3/4	35.60
42 1/2	*1, 12	2 1/4	3/4	35.80
42 3/4	*1, 12	2 1/4	3/4	36.00
43	*1, 12	2 1/4	3/4	36.20
43 1/4	*1, 12	2 1/4	3/4	36.40
43 1/2	*1, 12	2 1/4	3/4	36.60
43 3/4	*1, 12	2 1/4	3/4	36.80
44	*1, 12	2 1/4	3/4	37.00
44 1/4	*1, 12	2 1/4	3/4	37.20
44 1/2	*1, 12	2 1/4	3/4	37.40
44 3/4	*1, 12	2 1/4	3/4	37.60
45	*1, 12	2 1/4	3/4	37.80
45 1/4	*1, 12	2 1/4	3/4	38.00
45 1/2	*1, 12	2 1/4	3/4	38.20
45 3/4	*1, 12	2 1/4	3/4	38.40
46	*1, 12	2 1/4	3/4	38.60
46 1/4	*1, 12	2 1/4	3/4	38.80
46 1/2	*1, 12	2 1/4	3/4	39.00
46 3/4	*1, 12	2 1/4	3/4	39.20
47	*1, 12	2 1/4	3/4	39.40

HAND POWER BOLT THREADING MACHINES

THREADING MACHINE FOR BOLTS AND NUTS

Bench or Floor Machine for Hand Use

Capacity— $\frac{1}{4}$ inch to $\frac{3}{4}$ inch bolt threads.
Spindle— $\frac{1}{8}$ inch diameter hole full length to cut any length of thread.

Length of Thread—15 $\frac{1}{2}$ inches at one setting.
Carriage—Moved forward and backward by lever to facilitate starting of thread. Jaw supports opened and closed by hand wheel and fitted with hardened tool steel grip-jaws for holding a variety of sizes and shapes.

Standard Equipment

Tap Chuck, Oil Tank, Wrench, Machine Nut Taps, Dies and Machine Collets for cutting $\frac{1}{4}$ inch, $\frac{3}{8}$ inch, $\frac{1}{2}$ inch, $\frac{5}{8}$ inch, $\frac{3}{4}$ inch, $\frac{1}{2}$ inch, $\frac{5}{8}$ inch, $\frac{3}{4}$ inch.

Prices with Standard Equipment

Bench machine complete.....\$50.00
 Mounted on legs.....57.00

U. S. Standard Threads furnished unless otherwise specified.

V form and Whitworth threads furnished when requested.

Space Occupied. Bench or Floor—34x20 inches.

Weights—Net 200 lbs., boxed 255 lbs. With legs, net 300 lbs., boxed 375 lbs.



Fig. 6

THE CHAMPION THREAD-CUTTING MACHINE

Furnished with Dies only, or with Dies, Taps and Tap Chucks

The Champion Thread-Cutting Machine is furnished with dies complete as shown in illustration or with dies, taps and tap chucks complete at a price so reasonable that it produces a pronounced new outfit for every blacksmith that is not already supplied with some machine representing far greater investment with possibly not as great capacity.

It has a rack for starting the thread on the bolt instantly and with the long leveraged crank which can be shortened or lengthened according to the work. The mechanical eye at once discovers that this is just the machine he wants to place any shop in shape to meet any and all competition.

The Champion is sold with our guarantee that the workmanship and material must be the very best.



- No. 1 Champion Thread-Cutting Machine with Dies only cutting $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{1}{2}$ inches. Weight 40 lbs.....\$13.00
 No. 2 Champion Thread-Cutting Machine with Dies only cutting $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{1}{2}$ and 1 inch. Weight 45 lbs.....22.00
 No. 3 Champion Thread-Cutting Machine with

- Dies, Taps and Tap Chuck, complete, cutting $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{1}{2}$ inch. Weight 45 lbs.....\$24.00
 No. 4 Champion Thread-Cutting Machine with Dies, Taps and with two Tap Chucks, complete, cutting $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{1}{2}$ and 1 inch. Weight 55 lbs.....30.00

PRICE LIST OF DIES FOR THE CHAMPION THREAD-CUTTING MACHINE

Size	Price	Size	Price	Size	Price
$\frac{1}{8}$	\$1.50	$\frac{1}{4}$	\$1.50	$\frac{3}{8}$	\$1.50
$\frac{3}{8}$	1.65	$\frac{1}{2}$	1.80	$\frac{1}{2}$	2.00
$\frac{1}{2}$	2.25	$\frac{5}{8}$	2.40	$\frac{3}{4}$	2.60
$\frac{5}{8}$	2.85	$\frac{3}{4}$	2.90	1	3.00
1	3.40		3.75		

Unless otherwise ordered, we will furnish Dies of Thread-Cutting Machines $\frac{1}{8}$ oversize V thread. Can supply these Dies with exact size V, U. S. Standard, or Franklin Institute, A. L. A. M., and Whitworth form of thread, at regular prices, when specially ordered.

SEE INDEX FOR EXTRA TAPS AND COLLETS

THREADING MACHINES FOR BOLTS, NUTS AND PIPE

No. 36 LITTLE GIANT OUTFIT

With Automatic Opening Die Head

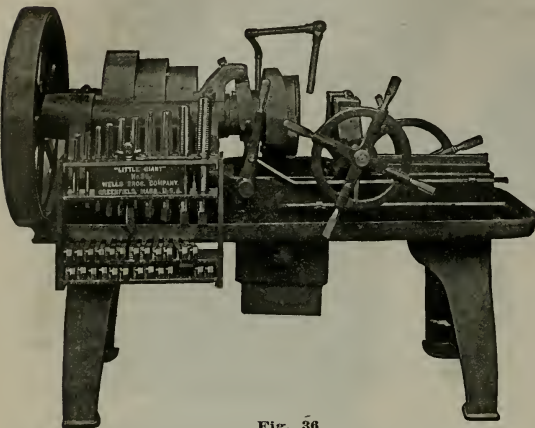


Fig. 36

***Extra Equipment**

Right hand Pipe Die-lands cutting $\frac{1}{4}$ inch, $\frac{3}{8}$ inch, $\frac{1}{2}$ inch, $\frac{3}{4}$ inch, 1 inch, $1\frac{1}{2}$ inch, $1\frac{1}{2}$ inch, 2 inch (extra).....\$32.00
Floor space occupied, 41x69 inches. Weights
 (including Friction Countershaft) net 1625 lbs.,
 crated 1950 lbs.

Capacity, $\frac{1}{2}$ to 2 inch bolt threads, $\frac{1}{4}$ to 2 inch pipe threads.* Cuts right or left hand. **Spindle,** $2\frac{1}{8}$ inch diameter of hole full length to cut any length of thread. **Length of thread,** 17 inches at one setting. **Carriage** moved forward and backward by hand wheel to facilitate starting of threads. **Vise** is opened and closed by hand wheel and fitted with interchangeable hardened tool steel grip-jaws for holding a variety of sizes and shapes. **Drive,** Cone pulley; 3 step; 10, 12 and 14 inch for $4\frac{1}{2}$ inch belt. **Countershaft speed,** 14x4 inch pulley, 300 R. P. M. **Geared** 12 to 1. **Oil Pump** geared direct to spindle. Works equally well with right or left hand drive.

Machine Equipped as Follows:

Automatic Opening Die Head, Tap Jaws, Oil Pump and Tank, Gear Guards, Splash Hood and Wrenches. Machine Nut Taps and Die-lands cutting right hand threads as follows: $\frac{1}{2}$ inch, $\frac{3}{8}$ inch, $\frac{1}{4}$ inch, $\frac{3}{4}$ inch, 1 inch, $1\frac{1}{2}$ inch, $1\frac{1}{4}$ inch, $1\frac{1}{8}$ inch, $1\frac{1}{2}$ inch, $1\frac{3}{4}$ inch, 2 inch.

Including Friction Countershaft.....\$335.00
 Including Plain Countershaft..... 325.00
 Without Countershaft..... 300.00
 Extra Die-lands, per set 4 pieces..... 4.00

U. S. Standard threads furnished unless otherwise specified.

Whitworth threads furnished when requested.

V form threads are not furnished with this size machine.

No. 32 LITTLE GIANT OUTFIT

With Automatic Opening Die Head

Capacity, $\frac{1}{4}$ inch to 1 inch bolt, $\frac{1}{4}$ inch to 1 inch pipe.* Cuts right or left hand. **Spindle,** $1\frac{1}{2}$ inch diameter of hole full length to cut any length of thread. **Length of thread,** 14 inches at one setting. **Carriage** moved forward and backward by hand wheel to facilitate starting of threads. **Vise** is opened and closed by hand wheel and fitted with interchangeable hardened tool steel grip-jaws, for holding a variety of sizes and shapes. **Drive,** Cone pulley; 3 step, 6, 8 and 10 inch for 3 inch belt. **Countershaft speed,** 12x4 inch pulley, 250 R. P. M. **Geared** 5 to 1. **Oil Pump** geared direct to spindle. Works equally well with right or left hand drive.

Machine Equipped as Follows:

Automatic Opening Die Head, Tap Jaws, Oil Pump and Tank, Gear Guards, Splash Hood, Wrenches.

Machine Nut Taps and Die-lands cutting right-hand threads as follows: $\frac{1}{4}$ inch, $\frac{3}{8}$ inch, $\frac{1}{2}$ inch, $\frac{3}{4}$ inch, $\frac{1}{2}$ inch, $\frac{3}{8}$ inch, $\frac{1}{4}$ inch, $\frac{3}{4}$ inch, 1 inch.

With Friction Countershaft.....\$100.00
 With Plain Countershaft..... 180.00
 Without Countershaft..... 165.00
 Extra Die-lands per set 4 pieces..... 2.50

U. S. Standard threads furnished unless otherwise specified.

V form and Whitworth threads furnished when requested.

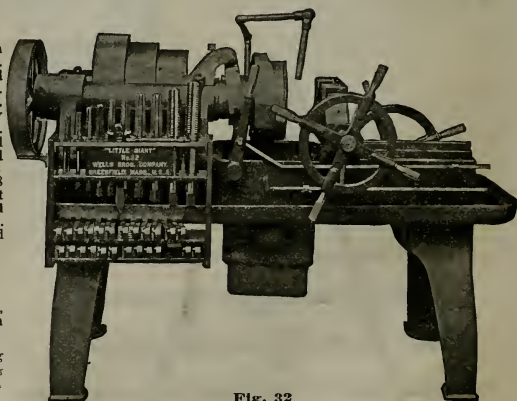


Fig. 32

***Extra Equipment**

Right-hand Pipe Die-lands cutting $\frac{1}{2}$ inch, $\frac{1}{4}$ inch, $\frac{3}{8}$ inch, $\frac{1}{2}$ inch, $\frac{3}{4}$ inch, 1 inch (extra)\$15.00
 Briggs standard furnished unless otherwise specified. Whitworth standard furnished when requested.

Floor space, 32x56 inches. **Weights** (including Friction Countershaft) net 925 lbs., crated 1050 lbs.

FLOOR AND POST DRILLS

WESTERN CHIEF ELECTRIC DRILL No. 20

A Long Stroke Post Drill equipped with a high class, powerful motor of the best make, costing less than 25c a day to operate.

There are no belts, the motor being directly connected with spur gear drive, accurately cut.

Fast and slow speed, instant change.

Horizontal positive gear driven worm feed, changeable instantly to fast, slow or medium, as desired.

Up and down run of spindle 8 inches, which is very important for shops, especially where wood-work is done.

Drills to center of 18 inch circle.

Bores 0 to 1½ inches.

Up and Down run of Spindle, 8 inches.

Up and Down run of Table, 20 inches.

Greatest distance from Table to Spindle, 19 inches.

Spindle bored for ½ or ¾ inch shank bits. Always state size when ordering.

Weight, 350 pounds.

List Price (as illustrated)\$135.00



Fig. 28

WESTERN CHIEF SENSITIVE BENCH DRILL No. 28

For Light and Rapid Drilling

Drills to the center of a 9 inch circle. Bores 0 to ½ inch. Vertical traverse of spindle, 3¼ inches. Vertical traverse of table, 8 inches. Greatest distance from table to spindle, 8 inches. Diameter of column, 2½ inches. Size of tight and loose pulleys,

4x1½ inches. Should run 650 revolutions per minute. Size of large cone pulley, 4¾x1½ inches. Size of small cone pulley, 3x1½ inches. Spindle is fitted with holes for drills having No. 1 taper shanks. Height, 32 inches. Weight, 85 pounds.

List price\$25.00



Fig. 0½

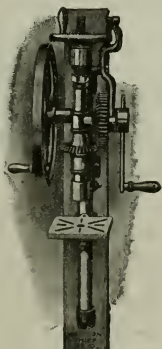


Fig. 0



Fig. 00

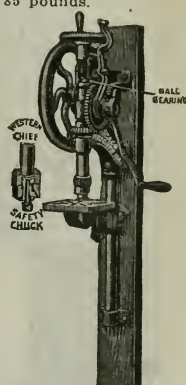


Fig. 3

No. 0½. Bores 0 to ¾ inch. Drills to center of 12 inch circle. Up and down run of spindle, 2¾ inches. Up and down run of table, 9½ inches. Greatest distance from table to spindle, 9½ inches. Takes bits with ½ inch shanks. Weight, 50 pounds. List each\$5.50

No. 0. Bores 0 to ¾ inch. Drills to center of 12 inch circle. Up and down run of spindle, 2¾ inches. Up and down run of table, 9½ inches. Greatest distance from table to spindle, 9½ inches. Takes bits with ½ inch shanks. Weight, 75 pounds. List each\$7.50

No. 00. Bores from 0 to 1¼ inches. Drills to center of 15-inch circle. Up and down run of spindle, 3 inches. Up and down run of table, 10¾ inches. Greatest distance from spindle to table, 13 inches. Size of pulleys for power, 8x2½ inches, should run 200 revolutions per minute. Weight, 110 pounds. Spindle bored for ½ to 41/64 inch shank bits. Always state size when ordering. List each\$10.00

No. 3. Automatic self-feed. Drills to center of 14½ inch circle. Bores 0 to 1 inch. Up and down run of spindle, 3½ inches. Up and down run of table, 11 inches. Greatest distance from table to spindle, 10½ inches. Spindle bored for ½ or 41/64 inch shank bits. Size of pulleys, for power, 8x2½ inches. Always state size when ordering. Weight 95 lbs. List price each\$10.00

FLOOR AND POST DRILLS

No. 16. A Post Drill with all the fine features of machine shop floor drills. Straight and bevel gears are cut. Fast and slow speed, instant change. Hand lever feed, also horizontal gear-driven positive self-feed, changed to fast, slow or medium speed instantly. These feeds work independently of each other, and bit is lifted quickly. Raise and lower device to table. Drills to center of 24 inch circle. Bores 0 to 1½ inches. Up and down run of spindle 6¼ inches. Up and down run of table, 15½ inches. Greatest distance from table to spindle, 18½ inches. Size of pulley, 10¼x2½ inches. Should run 175 to 180 revolutions per minute. Spindle bored for ½ to ¾ inch shank bits. Always state size when ordering. Weight, hand power 340 pounds; hand and power 360 pounds. Always shipped without pulleys, unless ordered.

Hand Power only List \$42.50
With Pulley (as illustrated) " 46.50

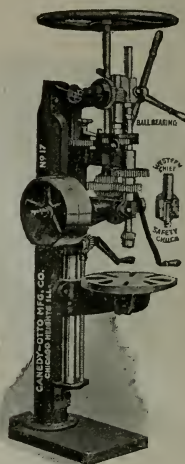
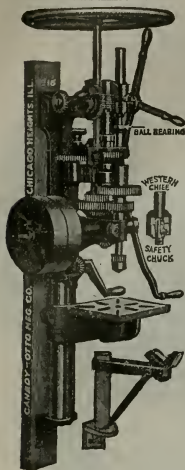


Fig. 16

Fig. 17

No. 17. A finished floor Drill, both hand and pulley power. Straight and bevel gears are cut. Fast and slow speed, instant change. Hand lever feed, also horizontal gear-driven positive self-feed, changed to fast, slow or medium instantly. These feeds work independently of each other, and bit is lifted quickly. Raise and lower device to table. Drills to center of 24 inch circle. Bores 0 to 1½ inches. Up and down run of spindle, 6¼ inches. Up and down run of table, 15½ inches. Greatest distance from table to spindle, 18½ inches. Height of machine, 71 inches. Floor space, 15x26 inches. Size of pulleys, 10¼x2½ inches. Should run 175 to 180 revolutions per minute. Spindle bored for ½ or ¾ inch shank bits. Always state size when ordering. When specially ordered we will bore spindle to receive No. 3 Morse taper. Weight, 535 pounds, hand and pulley power as shown.

List price, Hand and Pulley Power (as illustrated) \$65.00

No. 7. Automatic self-feed. Cut gears, fast and slow speed, instant change. Drills to center of 21 inch circle. Bores 0 to 1½ inches. Up and down run of spindle, 5 inches. Up and down run of table, 16½ inches. Greatest distance from table to spindle, 19½ inches. Size of pulleys for power, 10¼x2½ inches. Should run 175 to 180 revolutions per minute. Spindle bored for ½ or ¾ inch shank bits. Always state size when ordering. Weight, hand power, 275 pounds; pulley power, 295 pounds. The shaft of this drill (when ordered hand power) is left extended to receive pulleys any time thereafter. Always shipped without pulleys, unless ordered.

List price, without pulleys, Hand Power only \$33.50
List price, with Pulleys (as illustrated) 37.50

No. 18. Spindle is double equipped with ball bearings. Straight and bevel gears are cut. Fast and slow speed, instant change. Horizontal, positive, gear-driven self-feed, changeable instantly to fast, slow or medium as desired. Hand lever feed, working independent of self-feed; the most powerful of any post drill on the market. Permits a quick lift or return of spindle, an excellent feature for wood boring. Raise and lower device to table. Drills to center of 21 inch circle. Bores 0 to 1½ inches. Up and down run of spindle, 5½ inches. Up and down run of table, 16½ inches. Greatest distance from table to spindle, 18 inches. Size of pulleys, 10¼x2½ inches. Should run 175 to 180 revolutions per minute. Spindle bored for ½ or ¾ inch shank bits. Always state size when ordering.

When ordered hand power only, shaft is left extended so that pulleys may be placed at any time.

Hand Power only, weight, 300 lbs. List price \$40.50

Hand and Power (as shown), weight, 320
lbs. List price 44.50

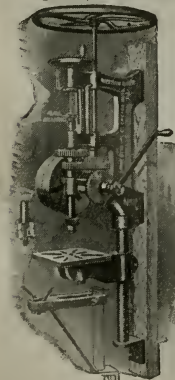


Fig. 7

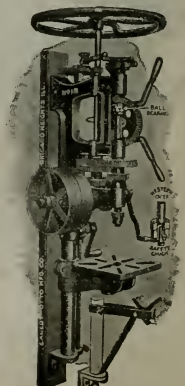


Fig. 18

UPRIGHT DRILLS

Model 35 Drill is equipped for hand lever, or wheel and lever feed only.

Model 36 Drill has back gear, power feed and automatic stop. Can be furnished with tapping attachment for a nominal charge.

A very valuable machine for all-around work. All parts are solid, simple and compact. The best of material and workmanship used throughout.

All machines are tested before leaving the factory and guaranteed in every respect.

LIST PRICES

No. 35.	Drill, plain lever	.....\$115.00
No. 35.	Drill, wheel and lever (as illustrated)	..... 120.00
No. 36.	Drill	..... 150.00
No. 36.	Drill, with tapping attachment (not illus.)	..... 160.00

DESCRIPTION

Diameter of column, 5 5/8 inches.

Travel of table on column, 17 inches.

Size of cone pulleys, 8 7/8, 7 1/4, 5 5/8, 4x2 1/2 inch face.

Diameter of tight and loose pulleys, 8x2 1/2 inch face.

Speed of countershaft, about 380 R. P. M.

Net weight, No. 36, 680 pounds.

Net weight, No. 35, 590 pounds.

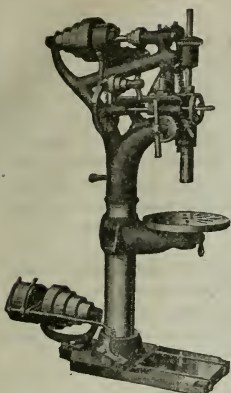


Fig. 36. Upright Drill

Height of drills, 72 inches.

Greatest distance between base and spindle, 25 inches.

Greatest distance between table and spindle, 25 inches.

Travel of spindle, 9 inches.

Diameter of spindle in sleeve, 1 5/8 inches.

Spindle socket, No. 3 Morse.

Drills to center of 21 inch circle.

Diameter of table, 16 inches.

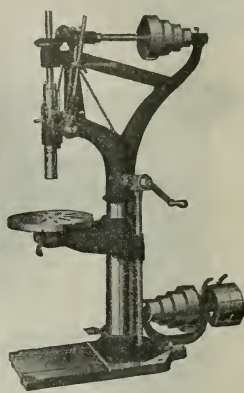


Fig. 35. Upright Drill

NO. 15 WESTERN CHIEF DRILL

Ball Bearings. Cut Gears. Back Geared. Self-feed. Changeable Speed.

Drills to center of 19-inch Circle. Bores 0 to 1 1/2 inches. Up and down run of spindle 4 inches. Up and down run of table, 11 3/4 inches. Greatest distance from table to spindle, 13 3/4 inches. Size of pulleys, 8x2 1/2 inches. Should run 200 revolutions per minute. Spindle bored for 1/2 or 5/8 inch shank bits. Always state size when ordering.

It has two speeds, Fast and Slow, and for heavy drilling the slow speed is instantly obtained by inserting the crank handle in rim of fly wheel.

The shaft on this drill (when ordered hand power) is left extended, to receive pul-

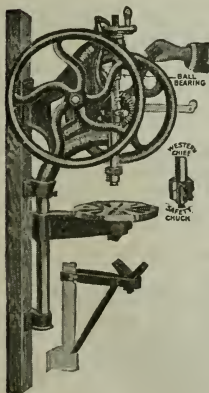


Fig. 15. Western Chief

leys at any time thereafter.

Hand Power (as shown), weight 180

lbs. Each, \$17.50

Hand and Pulley Power, weight 190

lbs. 19.50

WESTERN CHIEF DRILL NO. 19

A low-priced combined hand and self-feed Drill. Adapted to ordinary shop use.

The hand and self-feed are independent of each other, and for quick work, such as wood boring, it is unsurpassed, as bit is quick-lifted.

Drills to center of 16 1/2 inch circle.

Bores 0 to 1 1/4 inch.

Up and down run of spindle, 5 1/2 inches.

Up and down run of table, 11 inches.

Greatest distance from table to spindle, 14 inches.

Spindle bored for 1/2 or 5/8 inch shank bits. Always state size when ordering.

When ordered hand power only, the shaft is left extended, so that pulleys may be placed at any time.

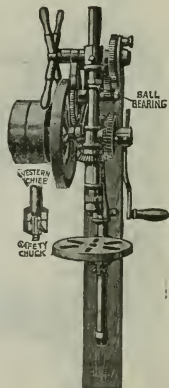


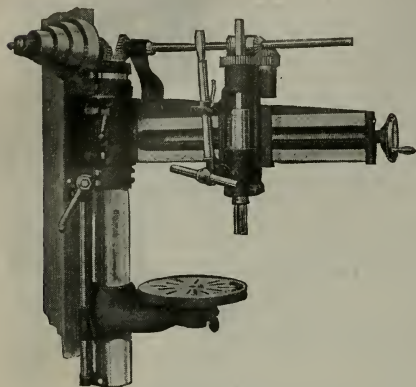
Fig. 19. Western Chief

PRICES

Hand Power only\$18.00

With Pulley (as illustrated) 20.00

WALL OR POST RADIAL DRILLS



Drill No. 50

These drills are extremely accurate and powerful. They embody many exclusive and valuable features, and combine several drills in one—all stationary floor drills up to 30 inch and 2 1/2 foot radial. The radial type of drill represents the only complete type of drilling machine and can be used where the stationary spindle type cannot. This is especially true in garages, bridge, boiler, machine, blacksmith shops, etc., or any place where a wide range of drilling is done.

The arm can be swung against the wall and securely tightened in any position. These drills are driven by a four-step cone countershaft (with self oiling bearings) which should be attached to the ceiling. The spindle head can be traversed along the arm by means of hand wheel screw, and can be firmly clamped in any position. The spindle has a quick return hand lever, in addition to the regular hand feed lever.

SPECIFICATIONS

Height of drill, 56 inches.

Drills to center of circle outside of column, 64 inches with 2 1/2 foot arm—84 inches with 3 1/2 foot arm.

Greatest distance of center of spindle to column, 32 inches with 2 1/2 foot arm—42 inches with 3 1/2 foot arm.

Smallest distance of center of spindle to column, 7 inches.

Greatest distance of spindle table, 18 inches.

Traverse of spindle up and down, 9 inches.

Diameter of spindle inside sleeve, 1 1/8 inches.

Diameter of column, 5 1/2 inches.

Size of cone pulleys, 8 3/4, 7 1/4, 5 1/2, 4x2 1/2 inch face.

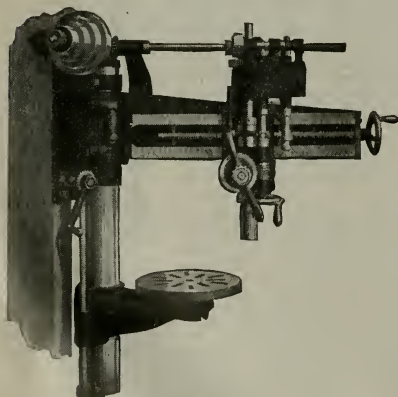
Diameter of tight and loose pulleys, 8x2 1/2 inch face.

Speed of countershaft, about 380 R. P. M.

Net weight, No. 50, 800 lbs; No. 51, 850 lbs.

Spindle, No. 3 Morse, will carry 1 1/4 inch drill.

Equipped with all necessary gear guards (not illustrated). Four-step countershaft furnished as part of regular equipment. Wood post not furnished with drill.



Drill No. 51

LIST PRICE

Model 50, 2 1/2 feet.....	\$200.00
Model 50, 3 1/2 feet.....	225.00
Model 51, 2 1/2 feet.....	300.00
Model 51, 3 1/2 feet.....	325.00

ELECTRICALLY-DRIVEN SENSITIVE DRILLS

FRICTION AND DIRECT DRIVE

These tools are designed for light work and will drill holes up to $\frac{5}{8}$ inch in diameter. The spindle is made of tool steel, is counterbalanced by a spring, and is provided with a ball thrust bearing. The weight and thrust of the friction disc is also carried on a ball bearing.

The table is counterbalanced by a weight in the column and can be swung around out of the way when desired. A finished boss is provided on the base under the spindle for convenience in centering long shafts. There is an index line on column for setting the table central at any height. The friction disc drive permits of quick adjustment of speed and also keeps the power in proper proportion to the size of the drill. Furnished complete, ready to run. No belts, shafting or countershafting necessary.

SPECIFICATIONS

Type	Floor		Bench	
	12	16	12	16
Drills in center of.....in.	12	16	12	16
Will drill holes.....in.	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{2}$	$\frac{5}{8}$
Greatest distance from table to spindle...in.	38 $\frac{1}{2}$	40	12	12
Vertical traverse of spindle.....in.	3	3	3	3
Vertical adjustment of table.....in.	35	35	6	7 $\frac{1}{2}$
Diameter of spindle in sleeve.....in.	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
Diameter of spindle above sleeve.....in.	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Finished diameter of column.....in.	3 $\frac{3}{4}$	4 $\frac{1}{4}$	3 $\frac{3}{4}$	4 $\frac{1}{4}$
Movement of sliding head.....in.	8	8	8	8
Entire length of spindle.....in.	24	27 $\frac{1}{2}$	24	27 $\frac{1}{2}$
Diameter of table.....in.	11 $\frac{1}{2}$	15 $\frac{1}{2}$	11 $\frac{1}{2}$	15 $\frac{1}{2}$
Maximum height with spindle up.....in.	74 $\frac{1}{2}$	79	46 $\frac{1}{2}$	47 $\frac{1}{2}$
Hole in spindle fits Morse taper No.....in.	1	2	1	2
Weight.....lbs.	250	310	222	280
Approximate speed of motor.....R. P. M.	1500	1400	1500	1400
Floor space.....in.	23x18	30x16	21x12	30x12
Maximum horse power.....	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$

PRICES

Floor Type

Description	12-Inch Price each	16-Inch Price each
Direct current.....	\$220.00	\$285.00
Two or three-phase, 60 cycles.....	230.00	295.00
Single-phase A. C., 60 cycles.....	240.00	305.00

Bench Type

Direct current.....	210.00	275.00
Two or three-phase, 60 cycles.....	220.00	285.00
Single-phase, A. C. 60 cycles.....	230.00	295.00

Wound for 110 or 220 volts, direct or alternating current 60 cycles only
In ordering specify voltage and kind of current.

Prices are for either friction or direct drive. Be sure to specify style in ordering.

Note—Direct driven type is made for direct current only. The friction driven drill has greater range of speed and is more sensitive than the direct driven type.

FOR OTHER TYPES OF DRILLS, SEE INDEX

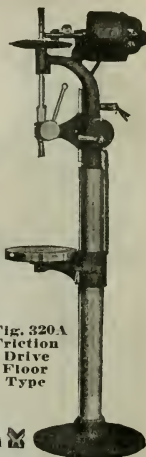


Fig. 320A
Friction
Drive
Floor
Type



Fig. 320B
Friction Drive
Bench Type



Fig. 320C
Direct
Drive
Floor
Type

PORTABLE ELECTRIC DRILLS

Direct Current

For drilling holes in castings and metals for all kinds. No. 3 drill has two speeds; the slow speed for drills larger than $\frac{3}{8}$ inch, and high speed for drills $\frac{3}{8}$ inch and smaller.

No. 4 is fitted with No. 2 Morse taper instead of chuck,

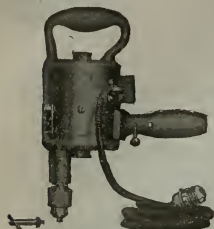


Fig. 0

No.	Capacity inches		Size of Chuck inches	Speed R. P. M.	H. P.	Wt., lbs.	Price Each
	Metal	Wood					
0	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{4}$	1500	$\frac{1}{8}$	6 $\frac{1}{2}$	\$ 60.00
1	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{8}$	800	$\frac{1}{8}$	12	100.00
2	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	650	$\frac{1}{8}$	19	120.00
3	$\frac{3}{4}$	1	$\frac{1}{2}$	350 & 650	$\frac{1}{8}$	21	140.00
4	1	1 $\frac{1}{4}$	..	460	$\frac{3}{8}$	30	160.00
4	1	1 $\frac{1}{4}$	..	250 & 460	$\frac{3}{8}$	33	180.00

Wound for either 110 or 220 volts, direct current

Alternating and Direct Current

These drills are fitted with a universal motor and will therefore operate on any single phase circuit, 60 cycles or less, as well as on direct current of the same voltage. Fan cooled. Complete as shown, except screw feed attachment, which is supplied at a slight additional cost. Handles removable.

No. 3U is the same as No. 2U except that it is provided with two speeds. For drilling larger holes than $\frac{3}{8}$ inch the drill bit must run at a slower speed than when drilling $\frac{3}{8}$ inch and smaller.

No. 4U is fitted with No. 2 Morse taper instead of chuck. Speeds given are those of drill spindle when drilling to a maximum capacity; as the size of holes is decreased, the speed is increased.

TABLE OF U MODEL DRILLS

No.	Capacity inches		Size of Chuck inches	Speed R. P. M.	Wt. lbs.	Price Each
	Metal	Wood				
1U	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{4}$	1000	7	\$ 80.00
1 $\frac{1}{2}$ U	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{8}$	800	9	100.00
2U	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	650	14	120.00
3U	$\frac{5}{8}$	1	$\frac{1}{2}$	400 & 700	17	140.00
4U	$\frac{3}{4}$	1	..	600	24	160.00
4U	1	1 $\frac{1}{4}$	..	340 & 600	27	180.00

Wound for either 110 or 220 volts.



Fig. 1U

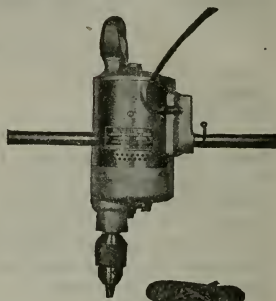
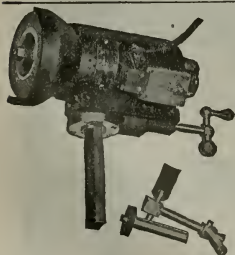


Fig. 2U



CENTER GRINDERS

With Hand Feed These machines have been designed specially for grinding lathe centers. They are entirely self-contained, and have no loose parts to get lost or misplaced. Complete as shown, with wheel and internal grinding attachment. Larger or smaller wheels can be used.

When used for other than cutter grinding, the clamp for holding adjustment arm can be removed. The wheel end bearings are all made taper with adjustment for taking up wear. Made in three sizes. Shank removable.

No.	Traverse of Wheel inches	Size of Wheel Inches, Hole	Size of Shank inches	Wt. lbs.	H. P. of Motor	Speed R. P. M.	Direct Current	Price, Each 2 or 3-phase	Price, Each Single-phase
1	3	4x $\frac{3}{8}$ x $\frac{3}{4}$	$\frac{1}{2}$ x 1	12	$\frac{1}{4}$	4500	\$ 90.00	....	\$100.00
1 $\frac{1}{2}$	3	6x $\frac{3}{8}$ x $\frac{3}{4}$	$\frac{5}{8}$ x 1 $\frac{1}{4}$	22	$\frac{1}{2}$	3600	110.00	....	120.00
2	5	8x $\frac{3}{4}$ x $\frac{7}{8}$	$\frac{7}{8}$ x 1 $\frac{1}{2}$	45	$\frac{3}{4}$	2000	140.00	\$150.00	160.00

Wound for either 110 or 220 volts, direct or alternating current, 60 cycles.

These grinders can also be furnished without hand feed, at a reduction in price.

FOR OTHER STYLES OF ELECTRIC TOOLS, SEE INDEX

PORTABLE ELECTRIC DRILLS

MODELS B AND C DRILLS

When Ordering, Specify Your Voltage

These drills deviate somewhat in design from that followed by other manufacturers of electric portable drills. It will be noticed that restored in the Temco drills is the original and convenient shape of the ordinary breast drill. This type of drill is still used by many today in preference to power driven drills no doubt on account of its simplicity in design and convenience in handling.

The motors used in Temco tools are of the high speed commutator type. The armature shaft is from nickel forging steel, and the armature core is built up from thin sheets of magnetic steel, the cores carefully wound and insulated. The commutator is made from hard drawn copper bars forced together under strong pressure. The mica is cut back from the surface under strong possibility of it protruding and preventing full contact of the brushes. This construction also causes a current of air to pass over the armature sufficient to keep the motor cool.

The bearings are of non-gran bronze, conceded the most efficient and durable bearing made for high speed work.

The brushes are of hard carbon and have a broad surface on the commutator. The brush springs are bronze and have a large number of coils, insuring a uniform tension on the brushes at all times regardless of wear.

The fields are built up of laminations of electrical sheet of the highest quality, and the coils are carefully wound and insulated.

Convenient Features

They operate on either alternating or direct current. Attachment is made to the ordinary drop cord or incandescent lamp socket.

They run forward or reverse.

The motor instantly, it is conveniently located near the handle and is always accessible. It is operated without moving the hand off the handle.

The breaker feature for changing drills or taps instantly by hand without the use of the ordinary chuck wrench or key. The spindle speed of Model B Drill is regulated automatically by the amount of pressure back of the drill.

Model C Drill has two speeds, the gears running in grease.

The ratchet feed may be removed, the attachment in no way causing any inconvenience to the operator when the drill is used for strictly portable purposes.

Model C Drill has the off-set spindle allowing close quarter drilling. (Applies also to Model A Drill.)

Model B Drill

Length over all including chuck.....15 inches
Weight complete with cord, plug and chuck.....12 lbs.
Capacity for drilling in steel or other metals..... $\frac{3}{8}$ inch
Capacity for tapping in cast iron or thin sheet steel..... $\frac{3}{16}$ inch
Speed—Spindle speed running idle.....900 r. p. m.
Consumption under load (maximum).....200 watts
Voltage (carried in stock).....110 or 220 volts
(Wound for any voltage from 50 to 250)

Current from the ordinary drop cord either A. C. or D. C.
Regular equipment includes standard $\frac{3}{8}$ inch chuck, cord and attachment plug. The standard chuck furnished is for round or straight shank drills. It has hardened tool steel jaws and is strong, accurate and well made. A key is furnished with regular equipment but it is not needed when operating this chuck on account of the breakerover attachment.

Special Equipment—A $\frac{1}{2}$ inch geared chuck interchangeable with the standard chuck. Emery wheel ready for attachment. Automobile engine valve reseater.

List price.....\$45.00

Model A Drill (not illustrated)

This tool is designed for drilling in either metal or wood. The off-set spindle allows drilling in close corners. The main driving spindle is run in a tobir bronze bushing, two inches in length. The lower handle can be readily removed whenever necessary.

The motor is the same as the motor used on our Model A Drill. The body of Model A Drill is made of aluminum. Arrangements are made for positive and effective oiling. The gears are accurately machined and run in grease.

It is very light and convenient to handle, and is especially useful for drilling in sheet metal of all kinds.

Specifications of Model A Drill

Length over all with chuck.....14 inches
Distance from center of chuck to edge of motor body..... $\frac{3}{8}$ inch
Weight complete with chuck.....9 lbs.
Spindle speed, running idle.....2500 r. p. m.

Capacity in steel and similar metals..... $\frac{1}{4}$ inch
Maximum consumption under load.....250 watts
Voltage (carried in stock for 110 or 220 volts).....50 to 250
Current from ordinary drop cord, either A. C. or D. C.
List price each.....\$35.00

Model O Drill (not illustrated)

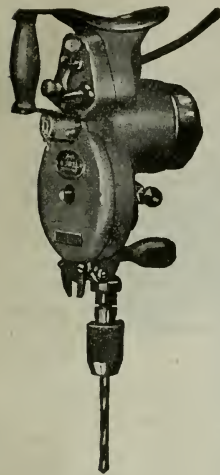
Model O Drill is especially designed for drilling in cast iron, brass and other soft metals. Also for light drilling in wood.

The general construction is similar to Model A Drill except in Model O Drill the chuck spindle is in the center of the motor body and is directly connected to the motor shaft without gear reduction. The chuck spindle runs in a tobir bronze bushing of ample bearing surface. Model O Drill will operate on either alternating or direct current.

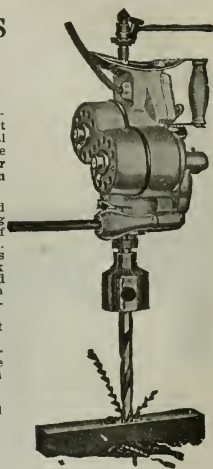
Specifications of Model O Drill

Length over all with chuck.....15 $\frac{1}{2}$ inches
Speed under load.....4500 r. p. m.
Weight, complete with chuck.....8 lbs.

Capacity in cast iron, brass and soft metals..... $\frac{1}{4}$ inch
List price each.....\$35.00



Model B



Model C

ELECTRIC DRILLS CHICAGO PNEUMATIC

HEAVY DUTY SIDE SPINDLE DRILL

Direct Current or Single Phase Alternating Current

Universal Type for 120-240 Volts

These drills, which are known as the Universal Type, possess the unique property of being capable of operation interchangeably on direct current or on single phase alternating current of 60 cycles or less. This feature is of great value to contractors or others who have occasion to do work in various localities which may be supplied with either current. The No. 000, No. 000X and No. 00 drills are supplied with breast plates only. The Nos. 0, 1 and 2 drills can be furnished with either feed screw, breast plate or spade handle, as desired.



Fig. 1 S. S.

UNIVERSAL ELECTRIC DRILLS

Size	Capacity, inches		Drill Socket	Speed Full Load	Weight in pounds		Net Price
	Metal	Wood			Net	Gross	
No. 000 Midget	$\frac{3}{16}$	$\frac{5}{16}$	$\frac{3}{8}$ in. Chuck	1500	6	10	\$ 60.00
No. 000X Midget	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{4}$ in. Chuck	700	7	12	80.00
No. 00	$\frac{5}{16}$	$\frac{7}{16}$	$\frac{1}{8}$ in. Chuck	1200	10	15	90.00
No. 0 S. S.	$\frac{1}{8}$	$\frac{1}{2}$	No. 0 Chuck	700	17	30	110.00
No. 1 S. S.	$\frac{1}{2}$	$\frac{5}{8}$	No. 1 Chuck	400	22	41	136.00
No. 2 S. S.	$\frac{7}{8}$	$1\frac{1}{4}$	No. 2 M. T.	250	31	65	180.00

ALTERNATING CURRENT ELECTRIC DRILLS

For 2 or 3 Phase—60 Cycles

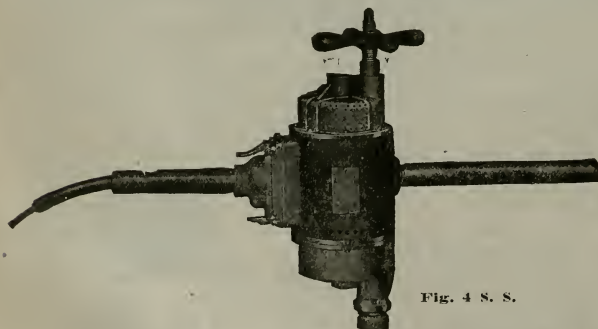


Fig. 4 S. S.

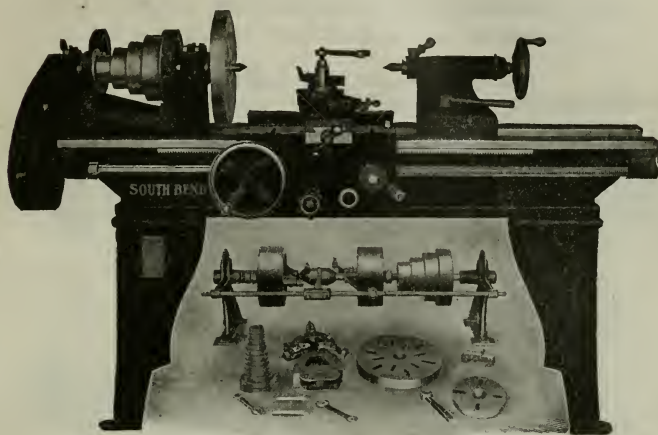
Drills of the heavy duty type, can be furnished for two or three phase, 60-cycle current. The prices given below are for drills wound for either 120 or 240 volts, but the No. 2, 3 and 4 drills can be furnished for 440 volts, when required, at an additional cost of \$5.00 for each size. It is to be understood that these drills will not operate on single phase current, but it is necessary to have two or three phase for their operation.

Size	Capacity, inches		Drill Socket	Speed Full Load	Weight in pounds		Net Price
	Metal	Wood			Net	Gross	
No. 0 S. S.	$\frac{3}{8}$	$\frac{3}{4}$	No. 0 Chuck	600	17	30	\$110.00
No. 1 S. S.	$\frac{1}{2}$	1	No. 1 Chuck	450	22	41	136.00
No. 2 S. S.	$\frac{7}{8}$	$1\frac{1}{2}$	No. 2 M. T.	315	31	65	190.00
No. 3 S. S.	$1\frac{1}{4}$	$2\frac{1}{4}$	No. 3 M. T.	230	48	82	224.00
No. 4 S. S.	2	$3\frac{1}{2}$	No. 4 M. T.	185	75	120	280.00

FOR HIGH SPEED DRILLS, SEE INDEX

SOUTH BEND SCREW CUTTING ENGINE LATHES

Fitted with Automatic Longitudinal Feed and Automatic Cross Feed
and Compound Rest



No. 40-16 INCH SWING

Regular equipment, as illustrated under lathe, is included in price

The following description applies to all sizes of South Bend Lathes No. 29, No. 33, No. 34, No. 36, No. 37, No. 40 and No. 44. The principal dimensions are shown in tabulated form on the opposite page.

Bed is rigid, cross ribbed by heavy box braces cast in at short intervals its entire length; has three V's and one flat way for front bearings of head and tail stock. The rack is of steel, cut from the solid bar.

Head Stock is equipped with improved reverse. Spindle is of special spindle steel accurately ground. Bearings are the best phosphor bronze with ample oiling facilities and adjustable for wear.

Tail Stock is off-set to allow compound rest to swivel parallel to the bed and is provided with set over for turning taper. Tail stock center is self-ejecting.

Carriage is strong with wide deep bridge; has T slots for clamping work for milling and boring. Both automatic cross feed and automatic longitudinal feed are operated from

front of apron and but one feed at a time can be engaged. Both feeds are driven by a splined screw and worm so that the thread of the lead screw is used for screw cutting only.

Thread Cutting. Lathe is indexed to cut standard threads from 4 to 40, right or left, including 11 1/2 pipe thread.

Graduation. The compound rest is graduated in degrees. The cross feed screw has graduated micrometer collar reading in one thousandths of an inch.

Equipment as shown in cut is included in the price and consists of large and small face plates, compound rest, two steel centers, center rest, change gears, adjustable stop for screw cutting, gear guards, necessary wrenches and double friction countershaft, also instruction book, How to Run a Lathe.

FOR PRICES SEE NEXT PAGE

SOUTH BEND SCREW CUTTING ENGINE LATHES

EQUIPPED WITH AUTOMATIC LONGITUDINAL FEED,
AUTOMATIC CROSS FEED AND COMPOUND REST

Regular Equipment, as Illustrated Under Lathe, is Included in Price

In Ordering give Number of Lathe and Length of Bed

No. 29. 11-inch Lathe, Automatic Feed

No. of Lathe	Swing Over Bed	Length of Bed	Distance Between Centers	Hole in Spindle	Approx. Weight on Skids	Price With Compound Rest
29	11 $\frac{1}{4}$ in.	4 ft.	24 in.	$\frac{5}{8}$ in.	600	\$247.00
29	11 $\frac{1}{4}$ in.	5 ft.	36 in.	$\frac{5}{8}$ in.	650	254.00
29	11 $\frac{1}{4}$ in.	6 ft.	48 in.	$\frac{5}{8}$ in.	700	262.00

No. 33. 12-inch Lathe, Automatic Feed

33	12 $\frac{1}{4}$ in.	4 ft.	26 in.	$\frac{5}{8}$ in.	800	\$260.00
33	12 $\frac{1}{4}$ in.	5 ft.	38 in.	$\frac{5}{8}$ in.	850	267.00
33	12 $\frac{1}{4}$ in.	6 ft.	50 in.	$\frac{5}{8}$ in.	900	278.00
33	12 $\frac{1}{4}$ in.	7 ft.	62 in.	$\frac{5}{8}$ in.	950	287.00

No. 34. 13-inch Lathe, Automatic Feed

34	13 $\frac{1}{4}$ in.	5 ft.	33 in.	$\frac{3}{4}$ in.	1000	\$285.00
34	13 $\frac{1}{4}$ in.	6 ft.	45 in.	$\frac{3}{4}$ in.	1060	295.00
34	13 $\frac{1}{4}$ in.	7 ft.	57 in.	$\frac{3}{4}$ in.	1110	305.00
34	13 $\frac{1}{4}$ in.	8 ft.	69 in.	$\frac{3}{4}$ in.	1170	315.00

No. 36. 14-inch Lathe, Automatic Feed

36	14 $\frac{1}{4}$ in.	5 ft.	30 in.	1 $\frac{1}{8}$ in.	1100	\$309.00
36	14 $\frac{1}{4}$ in.	6 ft.	42 in.	1 $\frac{1}{8}$ in.	1175	320.00
36	14 $\frac{1}{4}$ in.	7 ft.	54 in.	1 $\frac{1}{8}$ in.	1250	331.00
36	14 $\frac{1}{4}$ in.	8 ft.	66 in.	1 $\frac{1}{8}$ in.	1325	342.00
36	14 $\frac{1}{4}$ in.	10 ft.	90 in.	1 $\frac{1}{8}$ in.	1450	375.00

No. 37. 15-inch Lathe, Automatic Feed

37	15 $\frac{1}{4}$ in.	5 ft.	28 in.	1 $\frac{1}{8}$ in.	1275	\$330.00
37	15 $\frac{1}{4}$ in.	6 ft.	40 in.	1 $\frac{1}{8}$ in.	1350	340.00
37	15 $\frac{1}{4}$ in.	7 ft.	52 in.	1 $\frac{1}{8}$ in.	1425	352.00
37	15 $\frac{1}{4}$ in.	8 ft.	64 in.	1 $\frac{1}{8}$ in.	1500	363.00
37	15 $\frac{1}{4}$ in.	10 ft.	88 in.	1 $\frac{1}{8}$ in.	1650	396.00

No. 40. 16-inch Lathe, Automatic Feed

40	16 $\frac{1}{4}$ in.	6 ft.	36 in.	1 $\frac{5}{16}$ in.	1600	\$394.00
40	16 $\frac{1}{4}$ in.	7 ft.	48 in.	1 $\frac{5}{16}$ in.	1700	404.00
40	16 $\frac{1}{4}$ in.	8 ft.	60 in.	1 $\frac{5}{16}$ in.	1800	416.00
40	16 $\frac{1}{4}$ in.	10 ft.	84 in.	1 $\frac{5}{16}$ in.	1950	449.00
40	16 $\frac{1}{4}$ in.	12 ft.	108 in.	1 $\frac{5}{16}$ in.	2300	482.00

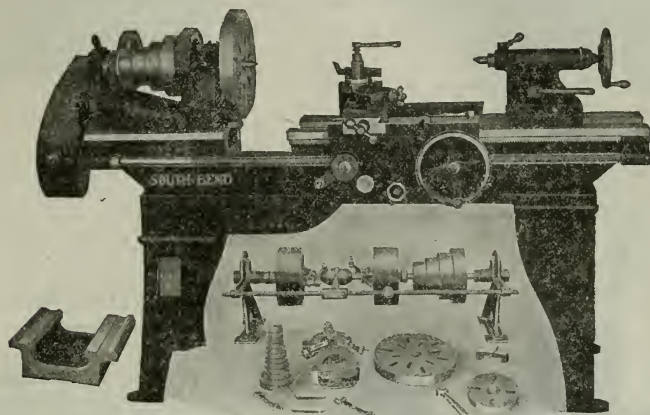
No. 44. 18-inch Lathe, Automatic Feed

44	18 $\frac{1}{4}$ in.	6 ft.	33 in.	1 $\frac{5}{16}$ in.	1700	\$454.00
44	18 $\frac{1}{4}$ in.	7 ft.	45 in.	1 $\frac{5}{16}$ in.	1825	469.00
44	18 $\frac{1}{4}$ in.	8 ft.	57 in.	1 $\frac{5}{16}$ in.	1950	486.00
44	18 $\frac{1}{4}$ in.	10 ft.	81 in.	1 $\frac{5}{16}$ in.	2200	519.00
44	18 $\frac{1}{4}$ in.	12 ft.	105 in.	1 $\frac{5}{16}$ in.	2450	563.00

EXTRAS:—Any of the above Lathes may be fitted with Raising Blocks, Taper Attachment, Gap Bed, Milling and Keyway Cutting Attachment.

SOUTH BEND LATHES WITH GAP BED AND BRIDGE

The Practical Lathe for all Around Work in the Machine and Repair Shop, adapted to Handling
Work of both Small and Large Diameter



Sizes. We furnish the 11 inch, 12 inch, 13 inch, 14 inch, 15 inch, 16 inch and 18 inch South Bend Lathes with gap bed when desired. For description and dimension of gap bed lathes see that of straight bed lathes, as the only difference between straight bed lathes and gap bed lathes is the bridge, and gap construction of bed, which requires more strength.

Bridge is used to close up the gap so that the lathe may be used as a straight bed for ordinary work. When work of large diameter is to be machined, bridge may be re-

moved from bed in a few moments, as it is accurately machined, scraped and fitted to gap, located by means of dowel pins and held in position by four substantial bolts. Bridge must be fitted in lathe at factory.

Equipment as shown in cut is included in the price of lathe and consists of large and small face plates, graduated compound rest, two steel centers, center rest, change gears, adjustable stop for screw cutting, a set of feed gears, gear guards, necessary wrenches, double friction counter shaft, and bridge.

PRICE OF GAP AND BRIDGE IS EXTRA OVER STRAIGHT BED LATHE

No. of Gap Lathe	Swing over Bed	Swing over Gap	Width of Gap	Lengths of Beds	Extra Wgt. of Gap Beds	Price Extra for Gap and Bridge
129	11 ¼ in.	15 in.	5 in.	4, 5, 6 ft.	50 lbs.	\$34.00
133	12 ¼ "	17 "	6 "	5, 6, 7, 8 ft.	75 lbs.	36.00
134	13 ¼ "	19 "	7 "	5, 6, 7, 8 ft.	100 lbs.	44.00
136	14 ¼ "	20 ½ "	7 ½ "	5, 6, 7, 8, 10 ft.	115 lbs.	48.00
137	15 ¼ "	22 "	8 "	5, 6, 7, 8, 10 ft.	125 lbs.	52.00
140	16 ¼ "	24 "	8 ¾ "	6, 7, 8, 10, 12 ft.	140 lbs.	60.00
144	18 ¼ "	26 "	10 "	6, 7, 8, 10, 12 ft.	170 lbs.	80.00

EXTRAS: The gap bed lathe may be supplied at extra cost with—Milling and Keyway Cutting Attachment. Raising Blocks and Taper Attachment.

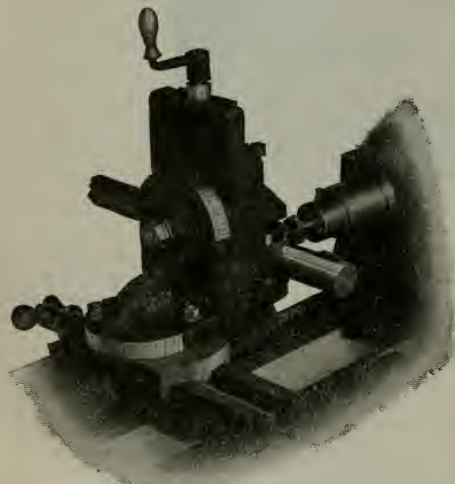
SOUTH BEND MILLING AND KEY-WAY CUTTING ATTACHMENT FOR LATHES

This attachment is practical in the shop because it equips the lathe for doing the 101 jobs that otherwise could be done only on the shaper or milling machine.

The regular equipment consists of Milling Attachment, two steel V blocks, one crank handle, one double end wrench, and two bolts and nuts for attaching.

	No. 1	No. 3	No. 4	No. 5
Size of Attachment	11 in.	12, 13 in.	14, 15 in.	16, 18 in.
Size of Lathe used on	3 "	5 "	6 "	7 "
Vertical Feed	4 "	6 "	7 "	8 "
Cross Feed	1 ½ "	2 ¾ "	3 ½ "	4 "
Vise will hold	1 "	1 ½ "	1 ¾ "	2 "
Depth of Jaws	3 ½ "	5 "	5 ½ "	6 "
Width of Base	3 ½ "	5 "	5 ½ "	6 "
Weight	25 lbs.	40 lbs.	50 lbs.	65 lbs.
Price	\$60.00	\$70.00	\$75.00	\$80.00

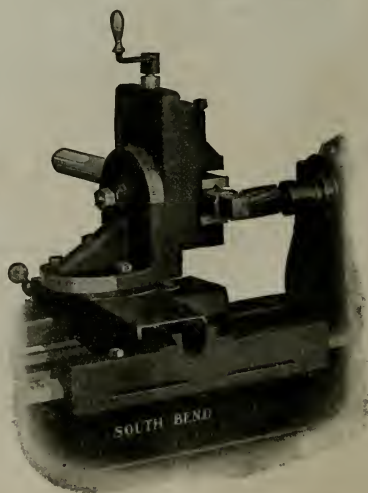
Arbors or cutters are not included in the price of the attachment, but are extra.



No. 4 Attachment on a 15-inch Lathe

KEY-SEATING WOODRUFF SYSTEM

The illustration is taken from the back of lathe, and shows the attachment holding a 1 ½ inch steel shaft which has been key-seated for the Woodruff system of key. A special chuck is fitted to the spindle lathe for holding the cutter.



No. 4 Attachment on a 15-inch Lathe

SQUARING A STEEL SHAFT IN THE LATHE

Illustration shows a No. 4 attachment fitted to a lathe squaring a 1 ½ inch steel shaft. A spiral end mill is fitted into the taper of the spindle. The shaft is fed horizontally across the face of the end mill to the desired depth. Then by using the vertical feed you can get a clear sharp corner.

And end mill cutting in the above manner does not need near as much power as if it were cutting on the face, and it makes a much cleaner job.

FORGES



Fig. BB and XBB

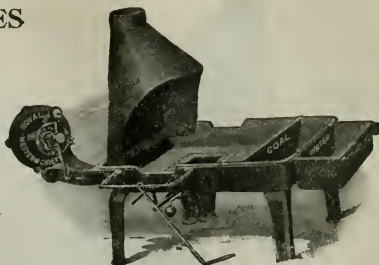


Fig. 8 and 9

B. B. and X. B. B. FORGES

For Blacksmith, Wagon and Plow Shops, etc. Heavy and Light Work.

Stationary Blast Forges, very large, heavy and strong. Intended for shops supplied with power blast, or can "be used with ordinary bellows or blower, if desired. Equipped with solid firepot with side and center blast tuyere ball. Have tool rest and racks and lever attachment to blast gate, by means of which the smith easily regulates the blast.

B. B. Height, 26 inches; hearth, 37½x41 inches; over all, 37½x51 inches.
X. B. B. Height, 26 inches; hearth, 38x50 inches; over all, 38x60 inches.

(Always shipped PLAIN, unless otherwise ordered.)

	B. B.	X. B. B.
Plain, no Tank, no Hood, weight 375 lbs.	\$35.00	\$40.00
With Tank, no Hood, weight 440 lbs.	40.00	45.00
With Hood, no Tank, weight 390 lbs.	40.00	45.00
With Tank and Hood (as illustrated), weight 455 lbs.	45.00	50.00

(When specially requested, will furnish Round Canopy Hood at same price as Half-hood.)

ROYAL FORGES NOS. 8 AND 9

For Large, Heavy Construction and Contractors' Work. Outdoor Use

Very large, roomy, heavy blacksmith Forges for plow and agricultural shops. These Forges are as large as any blacksmith will ever need for any kind of heavy work.

No. 8. Hearth, 37½x41 inches; over all, 37½x51 inches;
fan, 12 inches; height, 26 inches.
No. 9. Hearth, 38x50 inches; over all, 38x60 inches;
fan, 12 inches; height, 26 inches.

(Always shipped PLAIN, unless otherwise ordered.)

	No. 8	No. 9
Plain, no Tank, no Hood, weight 435 lbs.	\$65.00	\$70.00
With Tank, no Hood, weight 500 lbs.	70.00	75.00
With Hood, no Tank, weight 450 lbs.	70.00	75.00
With Tank and Hood (as illustrated), weight 515 lbs.	75.00	80.00

When specially requested, will furnish Round Canopy Hood at same price as Half-hood.



Fig. 100

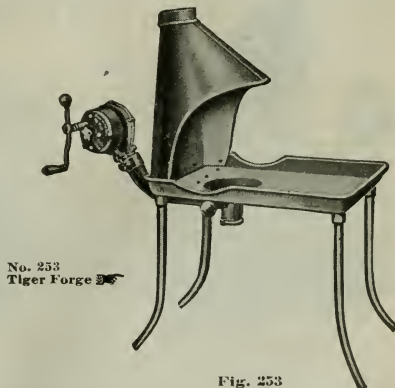


Fig. 253

Fig. 100—Royal Forge. For use of large Blacksmith, Wagon, Plow, and Railroad Shops, etc., where heavy work is done, and a first-class forge and fire needed. Blast is furnished by high grade blower with 12 inch fan geared 55 revolutions to one turn of crank, which furnishes blast ample for the largest work. The hearth is made of case iron; the legs are made of gas pipe and can be easily taken off for transportation. The tuyere iron is our genuine Royal Tuyere Iron, which is made separate from the forge, preventing breakage when a fire is built on frosty mornings. This is one of the best forges made, and once used by a smith he will seldom use any other. The hearth is 31½ inches wide, 45½ inches long and 30 inches high; length over all, 53 inches. The crank turns either backward or forward and the capacity of the fire is to heat 4 inch iron to welding point.

With one Tank, weight 395 lbs.	List Price	\$50.00
With extra Tank (as illustrated), weight 325 lbs.		55.00

Fig. 253—Tiger Forge. For Well-drillers, Railroads, Boilermakers, Quarries, Contractors, Outdoor Work, etc. A good substantial, low cost Forge, equipped with high grade fan furnishing blast ample to heat 3½ inch iron. Hearth and fire-pot are heavy and will last a lifetime. A good rigid force, fully guaranteed.

Blower, 9 inches; hearth, 25x36 inches; height, 30 inches; weight, 180 lbs.; capacity, 3½ inch iron.	List Price	\$31.00
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FORGES

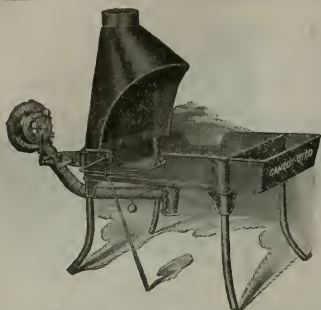


Fig. 35

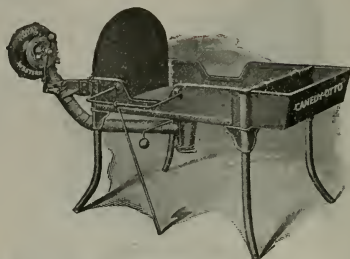


Fig. 20

ROYAL STEEL FORGE No. 35

The Royal Steel Forge No. 35 is extra large, well made, and is built for heavy work. It is well adapted for boiler makers, garages, repair shops, etc. Can be used for light work as well as for heavy, and is built to stand the heaviest work that comes to any shop. This Forge is equipped with The Royal Western Chief Blower, which is the best that money can buy. It has a 12 inch fan, geared 55 revolutions of the fan to one of the crank, producing a blast with a capacity to heat 4 inch iron to a welding heat. The hearth is made of steel, bound at the corners and top edges with angle steel, which not only makes a nice finish, but makes it exceedingly strong.

Fan, 12 inches.

Height, 30 inches.

Hearth, 30x36 inches.

Length over all, 44 inches.

Crank turns forward or backward.

List Price, without Tank, weight 195 lbs. \$60.00
List Price, with Tank (as illustrated), weight 225 lbs. 65.00

ROYAL FORGE No. 20

This forge is essentially the same as No. 35 Royal, except that it is not furnished with a full hood. It is intended for outdoor work and no provision is made to take care of the smoke. Equipped with Royal Western Chief Blower. Hearth is 30 inches wide, 36 inches long; height is 30 inches; length over all, 44 inches. Crank turns forward and backward. Forge has the same capacity as the Number 35, viz., heating 4-inch iron to welding point. It can easily be taken apart for transportation and all the parts packed in the hearth, which furnishes a very strong shipping case. This Forge has solid fire pot with ball tuyere, furnishing both side and center blast.

List Price, without Tank, weight 190 lbs. \$58.00

List Price, with Tank (as illustrated), weight 220 lbs. 63.00

Always shipped without Tank, unless so ordered.

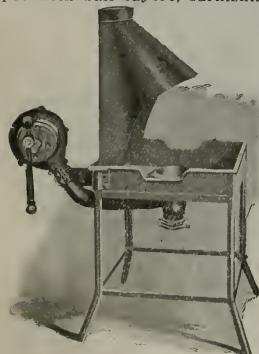


Fig. 36-37

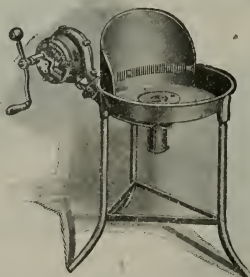


Fig. 76



Fig. 40-60

No. 36 and 37 ROYAL FORGES

Strong well-built, up-to-the-minute Forge, adapted for the use of repair shops, garages, etc. Equipped with the Royal Blower, which gives ample blast to heat $3\frac{1}{2}$ inch iron. Fire pot is duck nest type with tuyere ball, furnishing both side and center blast.

Fan, 10 inches.

Hearth, 24x24 inches.

Height, 30 inches.

Crank turns forward or backward.

Capacity to heat $3\frac{1}{2}$ inch iron.

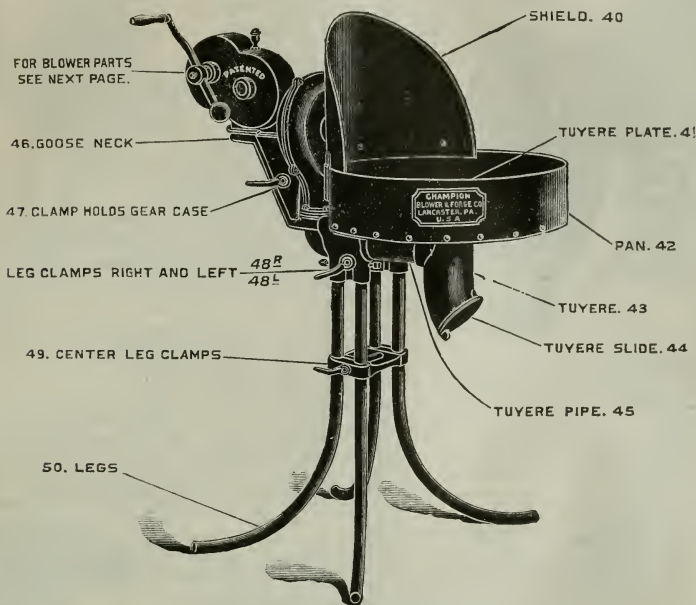
List Price, No. 36 (with shield), weight 135 lbs. \$40.00
List Price, No. 37 (with hood), weight 140 lbs. 44.00

ROYAL STEEL FORGES Nos. 40, 60 and 76

For Boilermakers, Rivet Work, Mines, Quarries and Army and Navy use. These Forges can be quickly knocked down and packed in a box 22x24x9 inches. Crank turns forward or backward. Capacity to heat $3\frac{1}{2}$ inch iron.

No. 40 Blower, 10 inches. Hearth, 22 inches. Height, 30 inches. Weight, 95 lbs. List Price, \$40.00
No. 60 Blower, 10 inches. Hearth, 18 inches. Height, 30 inches. Weight, 90 lbs. List Price, 35.00
No. 76 Blower, 9 inches. Hearth, 18 inches. Height, 30 inches. Weight, 85 lbs. List Price, 30.00

THE No. 401 CHAMPION STEEL RIVET FORGE



Made With Adjustable Ball Bearings Only. Hearth 18 Inches in Diameter

No. 401 Champion Steel Rivet Forge has been on the market for 16 years and is used by the great majority of railroads, bridge builders, boiler and structural iron workers of the world, also very desirable for garages.

Nothing was ever seen to even approach it for a strong positive blast. We therefore can safely guarantee it to increase the work over and above any other make of Rivet Forge 25%. Its Gearing is the "Famous 400" Champion "Patented" High Speed Spiral-Type. It runs noiseless. It can be taken apart for transportation, and against set up in a few minutes. It will produce blasts to weld $3\frac{1}{2}$ to 4-inch iron in ten minutes. No. 401 Steel Rivet Forge is used on 99 out of 100 structural steel buildings constructed. Crank turns either way to make the blast. Each turn of the crank produces 46 complete revolutions of the fan wing.

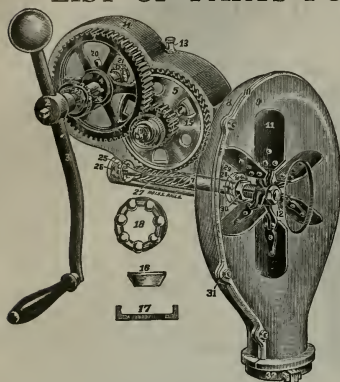
No. 401. Champion Steel Rivet Forge with Shield. Hearth 18 in. in diameter, height 30 in., fan 9 in. in diameter, weight 115 lbs. \$35.00

REPAIR PARTS FOR THE No. 401 CHAMPION STEEL FORGE

No. 40. Shield	\$0.75	No. 46. Goose Neck	\$2.25
No. 41. Tuyere Plant .....	.25	No. 47. Clamps hold gear case .....	.75
No. 42. Pan	3.75	No. 48R. } Both Leg Clamps	1.50
No. 43. Tuyere Barrel ..	.75	No. 48L. }	
No. 44. Tuyere Slide .....	.25	No. 49. Center Leg Clamps .....	.75
No. 45. Tuyere Pipe	1.50	No. 50. Legs, each .....	.50

FOR BLOWER PARTS, SEE NEXT PAGE.

LIST OF PARTS FOR 401 and 400 CHAMPION BLOWERS



When ordering parts always give the name and the number of the part wanted.

No. 1.	Driving gear	.....	\$1.50
No. 2.	Handle hub	.....	.25
No. 3.	Handle	.....	.75
No. 4.	Driving shaft	.....	1.50
No. 5.	Bronze gear	.....	1.90
No. 6.	Pinion	.....	.75
No. 7.	Spiral	.....	2.25
No. 8.	Rear half fan case:		
	No. 400 Blower, 12 inch	.....	1.50
	No. 401 Forge, 9 inch	.....	1.15
No. 9.	Front half fan case:		
	No. 400 Blower, 12 inch	.....	1.50
	No. 401 Forge, 9 inch	.....	1.15
No. 10.	Entire fan case:		
	No. 400 Blower, 12 inch	.....	3.00
	No. 401 Forge, 9 inch	.....	2.30
No. 11.	Wing	.....	1.15
No. 12.	Large lock nut	.....	\$0.08
No. 13.	Oil cup	.....	.15
No. 14.	Gear case cap	.....	.75
No. 15.	Set screw	.....	.08
No. 16.	Cone	.....	.15
No. 17.	Ball cup	.....	.15
No. 18.	Ball retainer	.....	.15
No. 19.	Disk	.....	.15
No. 20.	Set screw	.....	.08
No. 21.	Large lock nut	.....	.08
No. 22.	Ball retainer	.....	.15
No. 23.	Large lock nut	.....	.08
No. 24.	Ball retainer	.....	.15
No. 25.	Ball, ¼ inch per bearing	.....	.15
No. 26.	½ inch lock nut	.....	\$0.08
No. 27.	Gear case proper	.....	6.75
No. 28.	Front cone	.....	.15
No. 29.	Front cup	.....	.15
No. 30.	Large lock nut	.....	.08
No. 31.	¼ inch stove bolt, per set	.....	.15
No. 32.	Pipe clamp	.....	.25
	Bronze bushings	.....	.30
	Bronze gear pinion shaft	.....	.75
	Dust cap on crank shaft, side handle is on	.....	.15
	Dust cap on crank shaft, side opposite handle	.....	.15
	Dust cap on bronze gear shaft, either side	.....	.15
	Dust cap on rear of spiral	.....	.15
	Dust cap on front of spiral at fan	.....	.15

TUYERE IRONS

ROYAL TUYERE

Needs no clay

A large, heavy, solid iron fire-pot, with side and center blast Tuyere Ball.

Measures 8x9 ½ x4 inches inside.

Weights 50 pounds.

Diameter of inlet, 3 inches.

List price.....\$5.00

MAMMOTH TUYERE

Same style as Royal, but extra large size.

Size, inside, 9x11 ½ inches, 4 inches deep.

No clay required.

Weights 55 pounds.

Has square ball, furnishing side and center blast.

Diameter of inlet, 3 inches.

List price.....\$5.00

WESTERN CHIEF TUYERE

Has a loose ring top which rests on clay, to prevent falling or crumbling.

Weights 40 pounds.

Diameter of inlet, 3 inches.

List price.....\$2.50

FOR ALL KINDS OF FORGE TOOLS, SEE INDEX



Royal Tuyere



Western Chief Tuyere

PUNCHES AND FORGES

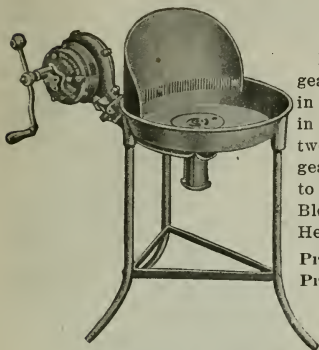


Fig. 254. Tiger Forge

TIGER FORGE No. 254

Each year the demand for crank gear forges is becoming greater, and in our No. 254, Tiger, we offer a forge in which the difference in price between the old lever type and the crank gear is small enough to allow anyone to possess an up-to-date forge.

Blower, 9 inches. Height, 30 inches.
Hearth, 22 inches. Weight, 80 lbs.

Price, with shield.....\$24.55

Price, with hood.....27.00



Fig. 150. Chicago Forge

CHICAGO FORGE No. 150

Blower.....	8 inches	Height.....	30 inches
Hearth.....	18 inches	Weight.....	80 pounds

A light, move-about Forge; adapted to light work. Is suited to quarries, mines, etc., and popular as a low-priced article. Can be fitted with hood.

List price. No. 150, with shield.....\$13.00

List price. No. 151, with hood.....15.00



Marvel Punch No. 10
Three-Quarter Front View

MARVEL PUNCH No. 10

Has row of four punches in front, sizes $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$ and $\frac{5}{16}$ inches, one punch being used at a time. All the punches may be left in place at all times if desired. Punches are simply dropped in place, and the steel block with thumb screw can be rapidly shifted over any punch desired, and punch tightened by turning thumb screw. The slide case is hardened steel. The movable block is hardened tool steel. The die is made of one piece, $\frac{7}{8}$ inch wide, top face of die is $1\frac{1}{2}$ inches from bottom of throat and $1\frac{1}{4}$ inches from top of throat, and is also extended forward so as to be able to punch web and flange of channels, eye beams, angles, etc.

Lever is used swinging either way.

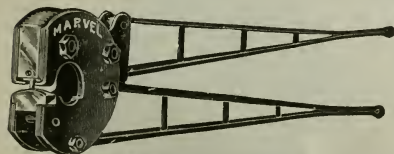
Capacity $\frac{7}{8}$ inch hole in $\frac{1}{4}$ inch stock.

Throat, 4 inches. Weight, 90 lbs.

List price. Complete with 4 punches, die and lever.....\$30.00

THE MARVEL PORTABLE PUNCH No. 20

Made Entirely of Steel



Marvel Portable No. 20

acting as a perfect brace. Capacity, $\frac{1}{4}$ inch hole in $\frac{1}{4}$ inch stock. Depth of throat, 2 inches. Weight, 16 pounds. Length over all, 38 inches.

Price, including one punch and die.....\$14.50

When not otherwise specified, $\frac{1}{4}$ inch punch and die is sent with each No. 20 punch.

Extra punches and dies, all sizes, from $\frac{1}{8}$ to $\frac{1}{2}$ inch, always on hand.

BLOWERS

ROYAL WESTERN CHIEF BLOWER

The Successful Blower

The Royal Western Chief Blower is far in advance of all other blowers from the points of workmanship, appearance and service. Made of high grade materials throughout, by skilled mechanics. It offers an excellent investment in any shop where a dependable first-class blower is required.

The Gears are all cut out of a solid piece of the finest tool steel and are accurately gauged down to one one-thousandth part of an inch.

The Bearings are not only turned, but are lead ground and run in boxes of phosphor bronze. Every part of the machine is as carefully made as is possible for good material and mechanics to produce. The gears are so finely fitted that they work absolutely noiseless, the gear case being oil and dust tight. The lower gears run continually in a bath of oil, preventing wear and making this machine one of the most durable and the most reliable blowers made.

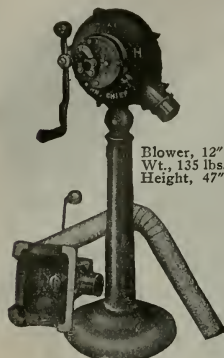
The Crank which can be adjusted for long or short strokes, turns one revolution to 55 revolutions of the fan, producing a blast with ordinary exertion, equal to a 60-inch bellows which is strong enough for any kind of blacksmith work any where.

The Stand is made of cast iron securely bolted together, and when desired it can be easily taken apart for transportation.

The Blower Head is hung on pivots and may be adjusted to suit any position required by the blacksmith. The fan case is provided with an oil cup at the top and an oil cock at the bottom. In starting the blower always open the oil cock at the bottom and pour the oil in the oil cup at the top until it begins to run out of the oil cock at the bottom, then close up both the oil cup and the oil cock and the lower gear will run in a bath of oil. It need not be oiled again for six months and will always produce a powerful blast.

The Fire Pot furnished with the Royal Western Chief Blower is a large, heavy solid iron fire pot with side and center blast tuyere ball. It weighs 50 pounds and measures 8x9½x4 inches deep inside. This fire pot needs no clay and has the best adjustment for controlling the fire.

List price \$28.00

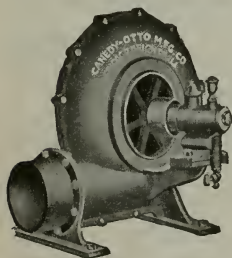


Royal Blower

PRESSURE BLOWERS

For Forge Fire, Small Cupolas, Furnaces, etc.

These Blowers are adapted to forge fires and small, light cupola work. They are very strong and durable, smooth running, and handsome in appearance. Sizes P3, P4, P5 and P6 have grease cup in addition to oil cup, so that should oil cup run dry the grease cup will continue to lubricate and prevent heating. Built for service.



Pressure Blower

No. of Blower	Hgt. in inches	Diameter of Inlet	Diameter of Outlet	Diameter of Pulley	Face of Pulley	Rev. per Min. 2-oz. Blast for Boiler Fires	Rev. per Min. 4-oz. Blast for Forge Fires	No. of Forge Fires	Sq. Ft. of Boiler Grate Surface Supplied by Blower	Weight, lbs.	H. P. Required About	Price
P1	10	3 ¼	2 ¾	1 ⅞	1 ¼	3,675	4,640	1	2	15	¼	\$12.00
P2	15	4 ½	4 ¼	3	2	3,000	4,000	2	5	35	⅓	18.00
P3	18	5 ½	4 ¾	3	2	2,600	3,600	4	6	50	1	20.00
P4	20	6 ½	5 ¾	3 ½	2 ½	2,300	3,200	5	8	70	1 ¼	28.00
P5	24	7	7 ½	4 ¾	3 ¼	1,928	2,680	7	10	105	1 ¾	33.00
P6	34	10	7 ½	5	3 ½	1,410	2,275	17	18	200	2 ½	64.00

CAST-IRON BLAST GATES

Outside Diameter inches	Weight lbs.	Price	Outside Diameter inches	Weight lbs.	Price
2 ½	3	\$1.25	5	11	\$2.25
3	5	1.50	6	15	2.50
4	6	1.75	7 ½	18 ½	3.25
4 ½	9 ½	2.00	8	23	3.50

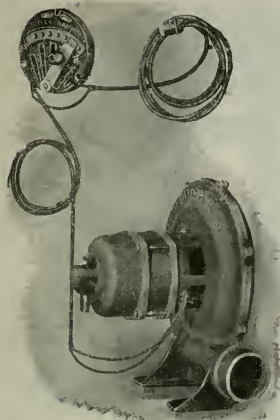


Blast Gate

ELECTRIC BLOWERS

NO. 4 ELECTRIC BLOWER

With Dustproof, 110 or 220 Volt Motor, Furnished for Either Alternating or Direct Current Circuits



One-fire, changeable-speed Electric Blacksmith Blower. Has a motor of a special type, developed exclusively for this service. Because of the hard service that an electric blower is put to in a blacksmith shop (due to the soot and dust, which shortens the life of a motor) it has been necessary to provide more durability than is usually required, and it is therefore, completely enclosed in a dustproof case. It will run in moderate temperature, without ventilation, and is equipped with automatic means of lubrication. This outfit is supplied with a five-speed durable type of regulating switch, for starting and controlling the speed of the motor, attached right on the blower, just above the motor, which saves the operator the unnecessary trouble of stooping over, or leaving his work, to get the desired blast.

Cost of operation, 2 to 3 cents per day. Economy in use and strain on motor will be saved if run just fast enough to give satisfactory results. When brushes on motor become worn, they should be replaced at once with others we furnish, as they are of special carbon.

When ordering electric driven Forges or Blowers, furnish us with the following information:

1. Whether current is alternating or direct.
2. If alternating current, find out cycles or alternations and state whether 110 or 220 volts. (Our standard motors are designed for 60 cycles.)
3. If direct current, the voltage is all the information needed.

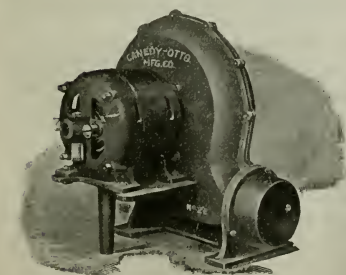
List Price\$36.00

NO. 2 ELECTRIC BLOWER

Height, 15 inches; net weight, 60 lbs.; diameter of outlet, $4\frac{1}{4}$ inches; number of forge fires, 1 to 3.

A well built blower with powerful, constant speed, induction type motor with capacity to handle from one to three forge fires. Fully guaranteed. When ordering electric driven Forges or Blowers, furnish us with the following information:

1. Whether current is alternating or direct.
2. If alternating current, give cycles and whether 110 or 220 volt. (Our standard motors are designed for 60 cycles.) If direct current, voltage is all that is required.

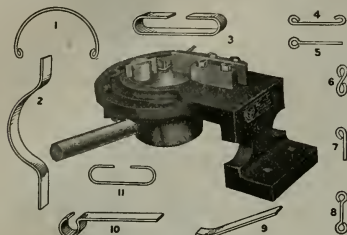


List Price\$75.00

PIPE AND BAR BENDING MACHINES

No. 0 EYE BENDER

A convenient machine for mounting on bench for forming light stock without heating same.



Capacity

$\frac{1}{8}$ in. dia. Round Rod or Wire, without heating.
 $\frac{1}{8}$ in. dia. or under Square Rod, without heating.
 $\frac{1}{8}$ in. by 1 in. Flat Stock, or equivalent, without heating.
 Net weight 40 lbs. Price.....\$25.00

EYE BENDERS

Nos. 1, 2 and 3



Size No. 1. Takes stock up to and including $\frac{1}{2}$ inch. Bends rings and eyes up to 2 $\frac{1}{2}$ inches, outside diameter. Net weight, 62 lbs.

Price of No. 1 Eye Bender, with one size of forming pin\$25.00

Size No. 2. Takes stock up to and including $\frac{5}{8}$ inch. Bends rings and eyes up to 3 inches, outside diameter. Net weight 83 lbs.

Price of No. 2 Eye Bender, with one size of forming pin\$30.00

Size No. 3. Takes stock up to and including 1 $\frac{1}{2}$ inch. Bends rings and eyes up to 7 inches, outside diameter. On account of the increased power required to bend offsets for eyes out of heavy stock the No. 3 machine is fitted with a special auxiliary hand lever for operating offset dog instead of by foot lever. Net weight 152 lbs.

Price of No. 3 Eye Bender, with one size of forming pin\$50.00

Extra Forming Dies

Any size up to 1 $\frac{1}{2}$ inch diameter, each.....\$1.00
 Any size from 1 $\frac{1}{2}$ inches up to 3 inches diameter, each.....1.50
 Any size from 3 inches up to 7 inches diameter, each.....2.00

PIPE BENDING MACHINE

Improved Style No. 5-A.



The pipe is not crowded forward by a roller, but is forced into the quadrant or forming die by means of a "V"-shaped rocker bar, which supports the wall of pipe at point of bending; this method insures a clean, uniform bend, without flattening pipe. While we recommend a 14 inch radius, or greater, for pipe as large as 2 inches, we have bent this size pipe successfully to a radius as small as 9 inches. 1 $\frac{1}{2}$ inch pipe to 8 inches, 1 $\frac{1}{4}$ inch pipe to 6 inches and 1 inch to 4 inches radii.

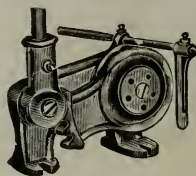
Piping of steel, iron, brass, copper, etc.,

can be bent cold up to and including 2 inches diameter; will also bend light angles, flats and tee bars by means of special formers.

The quadrants regularly furnished are for 1 inch pipe, with a radius of 6 inches, 1 $\frac{1}{4}$ inch pipe, with a radius of 9 inches, 1 $\frac{1}{2}$ inch pipe with a radius of 12 inches, and 2 inch pipe, with a radius of 14 inches. Net weight \$11 lbs.

Price, with plain stand and four adjustable quadrants as above described.....\$165.00
 Special quadrants will be furnished at extra cost.

MARVEL ROD CUTTER



Cutting Dies have round opening of correct size to cut off rods and wire within the capacity of the machine, which insures good work with ends round and true.

The Marvel Rod Cutter is so arranged as to bring the lever at a convenient height from the bench, and the gearing is so placed as to remove all danger of crushing the operator's hand. The round steel lever can be instantly removed, when desired.

The center of leverage is down low, which lessens the pull on the bench. The neat gauge is very handy when cutting a number of pieces of the same length.

No. 5. Cuts rods $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{7}{8}$, $\frac{1}{2}$ in. and intermediate sizes. Weight 12 lbs. Complete with lever, gauge and gauge rod, each....\$ 6.00

No. 6. Cuts rods $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{7}{8}$, $\frac{3}{4}$ in. and intermediate sizes. Weight 35 lbs. Complete with lever, gauge and gauge rod, each 10.00

No. 7. Cuts rods $\frac{3}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ in. and intermediate sizes. Weight 95 lbs. Complete with lever, gauge and gauge rod, each 22.00

FOR OTHER STYLES OF BENDING MACHINES, SEE INDEX.

PIPE AND BAR BENDING MACHINES

BAR BENDING TOOLS

Specialy valuable for contractors for reinforced concrete work. Heavy bars can be bent cold on the job. Machine is easily portable. Used by the U. S. Government on the Isthmian Canal.

Sizes

Nos. 4 and 5

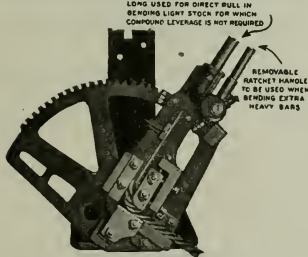


THIS RATCHET HANDLE IS 36 INCHES LONG

A very powerful machine, to be operated by one man, for bending iron rods without heating the same. To meet the demand for a machine capable of bending iron rods and bars of large size cold, we have designed the Nos. 4 and 5 benders. These machines have an auxiliary ratchet lever, which operates a pinion against a series of teeth in the frame, at a large ratio, thus making them very powerful.

The ratchet pawl may be thrown out of engagement and machine operated with the regular lever, making it suitable for bending light stock at a rapid rate. Will bend up to 90°.

THIS REMOVABLE BAR IS ABOUT 5 FT LONG USED FOR DIRECT BULL IN BENDING LIGHT STOCK FOR WHICH CONSIDERABLE LEVERAGE IS NOT REQUIRED



REMOVABLE RATCHET HANDLE TO BE USED WHEN BENDING EXTRA HEAVY BARS

Top view, showing a square twisted bar bent to 90°.

No. 4 BAR BENDER

For Cold Bending: Flat $\frac{1}{2}$ x 2 in., Round $1\frac{1}{4}$ in., Square 1 in., Square Twisted $1\frac{1}{4}$ in. or less.

For Hot Bending: Flat $\frac{3}{4}$ x 2 in., Round $1\frac{1}{2}$ in., Square $1\frac{1}{4}$ in., Square Twisted $1\frac{1}{4}$ in. or less.

Net weight 460 lbs. Price, complete with Stand\$90.00

No. 5 BAR BENDER

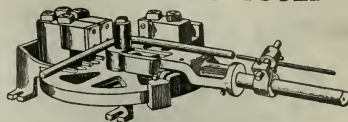
For Cold Bending: Flat $\frac{3}{4}$ x 2 in., Round $1\frac{1}{2}$ in., Square $1\frac{1}{4}$ in., Square Twisted $1\frac{1}{4}$ in. or less.

For Hot Bending: Flat 1 x 2 in., Round $1\frac{1}{4}$ in., Square $1\frac{1}{2}$ in., Square Twisted $1\frac{1}{2}$ in. or less.

Net weight 520 lbs. Price, complete with Stand\$115.00

Notes:—Special Dies, any width up to 6 inches, can be furnished for bending wide flat stock; also, dies for edge bending, angle iron bending or other special shapes to order.

BAR BENDING TOOLS



No. 2 "U" Bender

Suitable for bending round, square, flat or square twisted bars into "U" shapes or any angle up to 180° with a radius at point of bending to correspond to size of forming pin. Rectangular bends can be made by substituting rectangular front die in place of forming pin.

CAPACITIES:

No. 1 "U" Bender

For Cold Bending: Flat $\frac{1}{2}$ x 2 in., Round $\frac{3}{4}$ in., Square $\frac{1}{2}$ in., Square Twisted $\frac{1}{2}$ in. or equivalent.

For Hot Bending: Flat $\frac{1}{2}$ x 2 in., Round $\frac{3}{4}$ in., Square $\frac{3}{4}$ in., Square Twisted $\frac{3}{4}$ in. or equivalent.

No. 2 "U" Bender

For Cold Bending: Flat $\frac{3}{4}$ x 3 in., Round 1 in., Square $\frac{3}{4}$ in., Square Twisted $\frac{3}{4}$ in. or equivalent.

For Hot Bending: Flat $\frac{3}{4}$ x 3 in., Round $1\frac{1}{4}$ in., Square $1\frac{1}{2}$ in., Square Twisted $1\frac{1}{2}$ in. or equivalent.

PRICES:

No. 1 "U" Bender, 65 lbs. net.....\$28.00

No. 2 "U" Bender, 185 lbs. net.....45.00

For facing dies with tool steel for cold bending \$5.00 extra.

Extra Round Forming Dies

2 in. and under\$1.00

Over 2 in. and up to 4 in.1.50

Over 4 in. and up to 6 in.2.00

Over 6 in. and up to 7 $\frac{1}{4}$ in.2.50

Notes:—When it is desired to bend flat stock of a greater width than the maximum specified for these machines we can arrange special dies to order.

Extra Dies

Set of Edge Bending Dies.....\$5.00

Angle Iron Die (suitable for bending angle iron after a "V"-shaped piece has been cut out of one leg of angle).....2.50

Angle Iron Die with Plate (suitable for bending angle iron without cutting "V" shaped piece out of one leg).....7.50

FRAME BENDERS

CAPACITIES:

No. 1 Bender. For Cold Bending: $\frac{1}{2}$ in. round or square rods, or less. Flat stock $\frac{1}{2}$ x 2 in. or equivalent. For Hot Bending: Round or square rods up to $\frac{3}{4}$ in. Flat stock $\frac{3}{4}$ x 2 in. or equivalent. Will bend up to 90°.

No. 2 Bender. For Cold Bending: $\frac{3}{4}$ in. round or square rods. Flat stock $\frac{3}{4}$ x 2 in. or equivalent. For Hot Bending: $1\frac{1}{4}$ in. round or square rods. Flat stock $1\frac{1}{4}$ x 2 in. flatwise or $\frac{3}{4}$ x 1 $\frac{1}{2}$ in. and under edgewise, or equivalent. Will bend up to 90°.

No. 1 Bender, with cast-iron dies... 52 lbs. Price \$20.00

No. 1 Bender, with dies faced with tool steel for cold bending..... 52 lbs. 25.00

No. 2 Bender, with cast-iron dies....120 lbs. 35.00

No. 2 Bender, dies faced with tool steel120 lbs. 40.00

Edge Bending Dies, for bending flat stock edgewise 5.00

Angle Iron Die, for bending angle iron after a "V"-shaped piece has been cut from upper wing 2.00

Sharp Angle Die, for making bends less than 90 degrees 2.50

FOR OTHER STYLES OF BENDERS, SEE INDEX

TIRE BENDERS

THE CHAMPION NEW PATENT PEERLESS

Fig. 4091 has an adjusting screw at each end of the roll, with a graduated indicator on each side of the bender, showing the exact size of the tire being bent. The advantage of lifting the center roll out instead of drawing, as in all other benders, is that the collars need not be moved when tire is taken out; consequently, when once set, is always ready. It can be changed from slow to fast speed in an instant; is made in double gear only.

No. 0 Extra-Heavy Peerless Bender, bends 6x1 in., weight 450 lbs.\$45.00

No. 1 Peerless Bender, bends 4x1 in., weight 365 lbs. 40.00

No. 2 Peerless Bender, bends 3x1 in., weight 265 lbs. 30.00

No. 3 Peerless Bender, bends 3x ¾ in., weight 185 lbs. 24.00

All above benders made for power when specially ordered, for which an extra charge will be made.

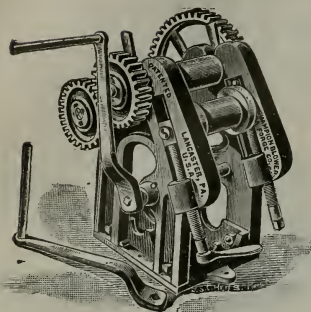


Fig. 4091

ILLINOIS BENDERS

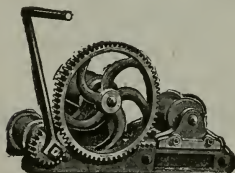


Fig. 4092. Nos. 2, 2 ¼ and 2 ½

No. 2 is made with gear and pinion, has turned rollers and bearings, and will bend 3 ¼-inch tire, or smaller, to a circle 24 inches in diameter, or larger.

With crank.\$7.00

No. 2 ¼ is made as No. 2, but will bend 4 ½-inch tire, or smaller, to a circle 24 inches in diameter, or larger.

With crank.\$7.75

No. 2 ½ is made as No. 2, but will bend 6-inch tire, or smaller, to a circle 24 inches in diameter, or larger.

With crank.\$8.50

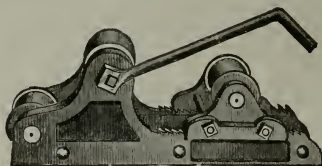


Fig. 4093. No. 1

Fig. 4093. No. 1 is made with turned rollers and bearings and will bend 3 ¼-inch tire, or smaller, to a circle 24 inches in diameter, or larger.

With crank.\$6.00

Extra Heavy

Fig. 4094. No. 3 is double geared, has turned rollers and bearings, is very strong and durable, will bend 5-inch tire, or smaller, to a circle 24 inches in diameter, or larger.

In bending very heavy tires, two cranks may be used on opposite sides, thus giving double power.

With one crank.\$10.50

With pulley for power. 16.00

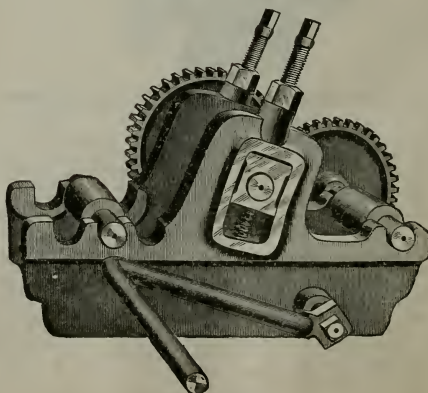
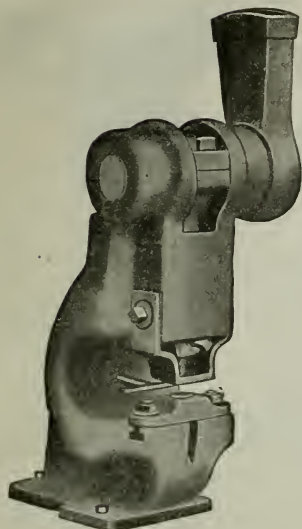


Fig. 4094

BOILERMAKERS' PUNCHES



Style 8 1/2

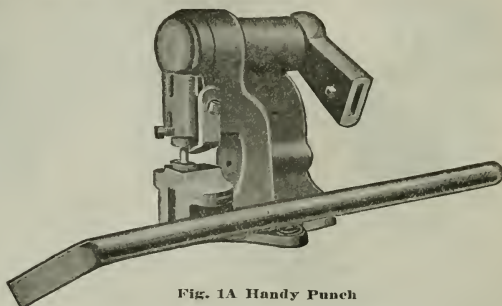


Fig. 1A Handy Punch

Three punches and dies and a lever bar go with each machine.

Style	Throat inch	Will Punch	Price, each
8 1/2	5	3/8 in. hole in 3/8 in. plate	\$ 38.00
28	10	3/8 in. hole in 3/8 in. plate	64.00
29	15	3/8 in. hole in 3/8 in. plate	87.00
31	18	3/8 in. hole in 3/8 in. plate	118.00

Style 1A—Handy Punch

Will punch 1/4 inch hole in 1/4 inch plate and will punch to the center of 5 inch circle. List price each \$13.75.

FORGED STEEL SCREW PUNCH WITH RATCHET ATTACH- MENT

The Ratchet Wrench, Fig. No. 3 is the latest and most economical tool for boiler-makers' use. The handle is made proper size to fit inside 2 1/2-inch pipe for extension of handle.

Fig. No. 2 shows Ratchet Head Screw. Fig. No. 1 Bar Head Screw. Fig. No. 4 Drill Socket to be used with Ratchet Wrench for drilling.

The Ratchet Wrench fits all sizes and kinds of screw punches made by us.

No. 1 punches 1/2-in. holes in 5/8-in. iron, 1 1/2 in. from edge; weighs 20 lbs.each \$16.00

No. 2 punches 3/4 in. hole in 5/8 in. iron, 2 1/2 in. from edge; weighs 48 lbs.each 25.00

No. 3 punches 3/4-in. hole in 3/4-in. iron, 3 1/4 in. from edge; weighs 70 lbs.each \$32.00

No. 4 punches 3/4-in. hole in 3/4-in. iron, 4 in. from edge; weighs 100 lbs.each 40.00

One punch and die furnished with each machine. When ordering specify size of hole to be punched.

Extra Punches and Dies, No. 1.per set \$2.00
 Extra Punches and Dies, No. 2." 2.50
 Extra Punches and Dies, No. 3." 2.80
 Extra Punches and Dies, No. 4." 2.80
 Ratchet Wrench.each \$15.00
 Drill Socket." 4.00

FOR CUTTERS AND SHEARS, SEE INDEX



No. 1

No. 3

No. 2

No. 4

HAND POWER PUNCHES AND SHEARS

HAND POWER BOILER MAKERS PUNCH

Style 42, Equipped with Structural Jaw for Working Angles, Channels, etc.



Fig. A1



Fig. A3



Fig. A10

Fig. 42.
Hand Power Boiler
Makers' Punch

Figs. A1-A3-A10 FLAT AND ROUND IRON SHEARS

No.	Will Shear		Angles	Weight	Weight Crated	Price
	Flat	Round				
A-1	$\frac{3}{8} \times 3$			90	120	\$13.00
A-1 $\frac{1}{2}$	$\frac{3}{8} \times 3$	$\frac{3}{4}$		100	130	16.00
A-2	$\frac{1}{2} \times 2$			160	200	19.50
A-2 $\frac{1}{2}$	$\frac{1}{2} \times 2$	$\frac{7}{8}$	$1 \frac{1}{4} \times 1 \frac{1}{4} \times \frac{1}{16}$	170	210	25.50
A-3				180	220	32.55
A-10	$\frac{5}{8} \times 5$	$1 \frac{1}{4}$		700	800	68.00

Fig. 42 BOILER MAKERS DEEP THROAT PUNCHES

No.	Depth of Throat	Will Punch	Weight	Weight Crated	Price
24	24"	$\frac{1}{2}$ " hole in $\frac{7}{8}$ " plate	2200	2300	\$160.00
41	15"	$\frac{5}{8}$ " hole in $\frac{1}{2}$ " plate	1800	1975	136.00
42	15"	$\frac{3}{4}$ " hole in $\frac{1}{2}$ " plate	2500	2700	185.00
43	24"	$\frac{3}{4}$ " hole in $\frac{1}{2}$ " plate	3400	3800	250.00
44	36"	$\frac{3}{4}$ " hole in $\frac{1}{2}$ " plate	4000	4500	316.00

All machines are equipped with Lever Bar and three extra sets of punches and dies.

BOILERMAKERS STEEL SCREW PUNCH

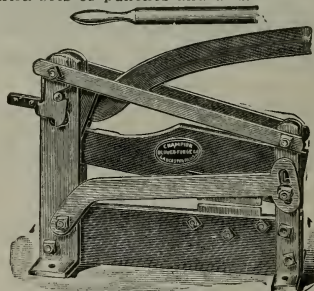
Fig. 510A. Boiler Makers'
Screw Punch

Fig. 510B. "Champion" Shear

No.	Will Punch Hole, inch	In Iron Thickness	Punch from Edge of Sheet	Weight each lbs.	Each	Extra Punch and Die, pair
A	$\frac{5}{16}$	$\frac{1}{4}$	$1 \frac{1}{2}$	15	\$20.00	\$3.50
B	$\frac{1}{2}$	$\frac{1}{4}$	$1 \frac{1}{2}$	17	24.00	3.50
C	$\frac{5}{8}$	$\frac{1}{2}$	$1 \frac{1}{2}$	27	30.00	4.00
D	$\frac{3}{4}$	$\frac{1}{2}$	$2 \frac{1}{4}$	40	40.00	4.00
E	$\frac{3}{4}$	$\frac{3}{4}$	3	60	60.00	5.00
G	$\frac{3}{4}$	$\frac{3}{4}$	110	80.00	80.00	5.00

One Punch and Die with each Machine.

Fig. 510B CHAMPION WROUGHT IRON AND STEEL SHEAR

The Champion Shear is made of wrought iron and the highest grade of steel throughout, there being not a single piece of cast iron or malleable castings used in its entire construction. This is conclusive proof that it will stand up without breakage under the work that we claim and fully for it.

No. 1.	Champion Shear, weight 255 lbs.; has 6-inch knives, $\frac{3}{8}$ -inch thick; will cut 4 inch by $\frac{1}{2}$ -inch flat iron, and 1 inch round or square iron	\$40.00
No. 2.	Champion Shear, weight 255 lbs.; has 12-inch knives, $\frac{1}{2}$ -inch thick; will cut 4-inch by $\frac{1}{2}$ -inch flat iron, and 1 inch round or square iron; also will cut plow steel from 6 to 10 inches wide	45.00

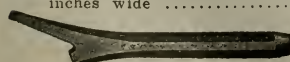


Fig. 510E

BOILERMAKERS' BEADING TOOL

Each \$0.75

SHEARS AND PUNCHES

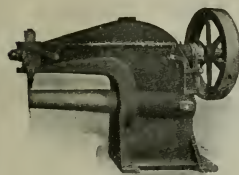


Fig. 56A
Stake Riveter and Punch
Length of Stake 36 in.

The left hand cut above illustrates our standard Combined Stake Riveter and Punch with single head. All our machines of this style are equipped with adjustable automatic stops which enable the operator to bring the punch to a stop at any point of stroke. All rivets are put in from the top. An automatic hold up clamps the sheets before the rivet is headed.

(One punching and one riveting attachment is furnished with wrenches and strippers is furnished with each machine. The stake and main eccentric shaft are carbon steel forgings.

Fig. 56A SIZES AND CAPACITIES

Length of Stake	Diam. of Stake	Riveting Capacity	Punching Capacity	R. P. M.	H. P.	Weight	Price	Weight Crated
8	6	$\frac{1}{4}$	$\frac{3}{8} \times \frac{3}{8}$	80 to 100	2	2850	\$338.00	3350
20	8	$\frac{3}{8}$	$\frac{1}{2} \times \frac{3}{8}$	80 to 100	$5\frac{1}{2}$	5800	700.00	6500
30	9	$\frac{3}{8}$	$\frac{1}{2} \times \frac{3}{8}$	80 to 100	$5\frac{1}{2}$	6800	740.00	7600
36	10	$\frac{3}{8}$	$\frac{1}{2} \times \frac{3}{8}$	80 to 100	$5\frac{1}{2}$	7500	775.00	8300
50	12	$\frac{3}{8}$	$\frac{1}{2} \times \frac{3}{8}$	80 to 100	$5\frac{1}{2}$	12500	1040.00	13500
62	14	$\frac{3}{8}$	$\frac{3}{8} \times \frac{1}{2}$	80 to 100	$5\frac{1}{2}$	16000	1385.00	17000

One punching and one riveting attachment is furnished with each machine. Attachment for double head \$132.00 extra. Extra stakes for smaller diameter of pipes can be furnished.

Fig. 15A DOUBLE END PUNCH AND SHEAR

SIZES AND CAPACITIES

Depth Throat	Capacity to Punch	Capacity to Shear		Single Weight	Single Price	Double Weight	Double Price	Single Crated Weight	Double Crated Weight
		Flat	Round						
10	$1\frac{1}{4} \times 1$	6×1	$1\frac{3}{4}$	7900	\$658.00	13800	\$1280.00	8400	14800
15				10000	789.00	16900	1480.00	10550	18000
20				12900	934.00	19800	1650.00	13475	21000
24				15800	1239.00	24100	2100.00	16400	25400
30				18700	1489.00	29800	2500.00	19325	31200
36				21400	1779.00	35000	3000.00	22950	36600
42				24700	1989.00	42000	3600.00	25375	43700
48				27000	2162.00	47500	3875.00	27700	49300

SHEARING ATTACHMENTS FOR FIG. 15A

Motor brackets cut gear and pinion.....	\$80.00
Cross Cut Shear.....	54.00
Splitting Shear.....	62.00
Angle Shear.....	85.00
Architectural Jaw.....	40.00
Bevel Shear.....	185.00

Requires $7\frac{1}{2}$ H. P. to operate.

Motor Should Run About 1200 R. P. M.

Fly Wheel Should Run 250 R. P. M.

Ratio of Gearing 9:1.

Size of Pulleys 24x6.

Above machine illustrates plain jaws and Adjustable Automatic Stop on both ends. One side shows angle shear in position, the other side illustrates Plain Punching Attachment.

Fig. 2 LEVER SHEAR FOR BAR, ROUND IRON AND ANGLE IRON

The Ideal Shear for Scrap Yards.

Has tight and loose pulleys, 36 inches in diameter, 6 inch face. Two fly-wheels 52 inches in diameter. Requires 5 horsepower to operate.

No.	Will Shear	Length of Blades	Weight	Price	Weight Crated	Horse Power
1	$2\frac{1}{4} \times 2\frac{1}{4}$ Square Soft Steel	18	16000	\$1075.00	16500	8
2	$1\frac{1}{4} \times 1\frac{1}{4}$ Square Soft Steel	14	5600	462.00	6400	5

Charge for Motor Drive including cut gear and pinion (but no motor) \$55.00.

HAND POWER COMBINED PUNCH AND SHEARS
STYLE 33

Will Punch to Center of 6 inch Circle



Fig. 33
Hand Power Combined
Punch and Shear

No.	Punch	Will Shear			Weight	Weight Crated	Price	Throat
		Flat	Round	Band				
15	$5 \times \frac{1}{4}$	$\frac{1}{2} \times 4$	1	$7 \times \frac{1}{4}$	1000	1200	\$77.00	7
33	$\frac{3}{8} \times \frac{3}{8}$	$\frac{1}{4} \times 2\frac{1}{2}$	$\frac{3}{8}$		350	475	32.00	3
66	$\frac{1}{2} \times \frac{1}{2}$	$\frac{1}{4} \times 4$	1		570	770	65.00	3
6	$\frac{1}{2} \times \frac{3}{8}$	$\frac{1}{2} \times 4$	1		510	710	55.00	3
9	$\frac{3}{8} \times \frac{3}{8}$	$1\frac{1}{4}$ plate			550	725	75.00	

Angle Shear for No. 15, \$18.50. Will shear $2 \times 2 \times \frac{1}{4}$ angle.

Machines are complete with 3 extra sets of punches and dies and one Lever Bar.

All hand-power machines should be rigidly fastened to the floor to secure good results.



Fig. 6
Hand Power Combined
Punch and Shear

BAR CUTTERS, PUNCHES AND SHEARS

Cut twisted or straight bars, angles, flats, tees and special shapes.
Have twice the capacity of cast iron machines of the same weight.

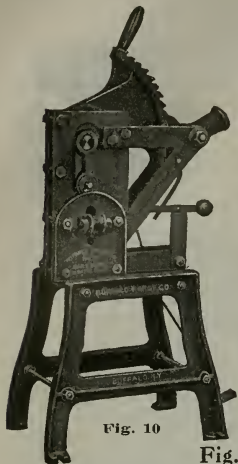


Fig. 10



Fig. 2B

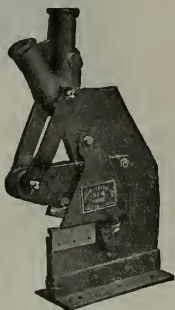


Fig. 4

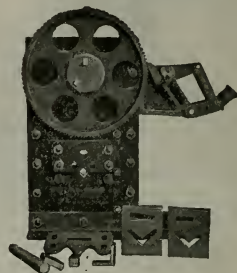


Fig. 5

Fig. 10. CONTRACTOR'S BAR CUTTER

For cutting concrete reinforcing bars. Cuts round or twisted high carbon steel bars. Machine weighs only 300 lbs., yet is stronger and of equal capacity to cast iron machines of twice the weight. It is therefore very desirable on scaffolding because it can be easily moved about. The frame consists of two heavy plates of "Armor-Plate" steel, of 75,000 lbs. tensile strength, rigidly bolted and riveted together, enclosing the working parts. Stripper on side prevents binding of the metal, and the roller prevents bars from dulling the knives. A treadle is provided for dropping the segment back into place after each cutting operation.

Two sets of knives are furnished, for cutting light, medium and heavy bars.

No.	Type	Cuts Twisted Squares	Cuts Rounds	Shipping Weight	List Prices
10	Legs	up to 1"	up to 1 1/4"	315 lbs.	\$ 95.00
10A	Wheels attached to legs	" " 1"	" " 1 1/4"	340 lbs.	100.00
10B	Without legs	" " 1"	" " 1 1/4"	254 lbs.	90.00
11	Legs	" " 1 1/4"	" " 1 3/4"	500 lbs.	190.00
11A	Wheels attached to legs	" " 1 1/4"	" " 1 3/4"	525 lbs.	200.00
11B	Without legs	" " 1 1/4"	" " 1 3/4"	439 lbs.	180.00

Fig. 2B. COMBINATION "ARMOR-PLATE" PUNCHES AND SHEARS

Frame is of "Armor-Plate" steel, having a tensile strength of 75,000 lbs.—over seven times stronger than cast iron. Strippers are adjustable to prevent binding of the stock when cutter leaves metal. A twin-socket lever operating both punch and shears, is worked from one side; its powerful leverage makes operation easy on all work.

No.	Punches	Cuts Rounds	Cuts Flats	Punches Furnished	Depth Throat	Shipping Weights	List Prices
2B	1/4 x 1/4"	5/8"	2x5/16"	1/4, 3/16 & 1/8"	3 3/4"	123 lbs.	\$50.00
3B	3/8 x 3/8"	3/4"	3x1/2"	1/4, 5/16 & 3/8"	4"	215 lbs.	70.00
4B	1/2 x 1/2"	1"	3x3/4"	1/4, 3/8 & 1/2"	5 1/4"	400 lbs.	100.00

Fig. 4. "ARMOR-PLATE" STEEL SHEARS

Made for bench use as shown, or furnished with cast iron stand. The frame consists of heavy "Armor-Plate."

No.	Mounted on	Cuts Flats up to	Cuts Rounds up to	Shipping Weight	List Prices
3	Bench Type	3x1/2"	3/4"	100 lbs.	\$50.00
3C	Cast Iron Stand	3x3/4"	3/4"	145 lbs.	75.00
4	Bench Type	3x3/4"	1"	250 lbs.	70.00
4C	Cast Iron Stand	3x3/4"	1"	250 lbs.	75.00

Fig. 5. "ARMOR-PLATE" BAR CUTTER

By changing links, one, two or three teeth of the ratchet wheel can be engaged at one stroke of the lever, according to size of material to be cut. The main frame consists of two heavy "Armor-Plates," rigidly bolted together. The plunger crankshaft, upon which the ratchet wheel is pressed, moves in flange bearings bolted to the two frame plates.

Machine is furnished with stripper, adjustable to the thickness of material to be cut. Only one pair of knives may be for any one of the five following shapes or combinations:

Squares and rounds—combination knives. Twisted bar only. Flats and angles—combination knives. Tee bars only. Channels and beams—capacities on application. One pair of knives required for each size.

Please specify which of these knives are wanted.

No.	One Set of Knives for Both		One Set of Knives	One Set of Knives for Both		One Set of Knives	Weight lbs.	List Prices
	Squares	Rounds	Twisted	Flats	Angles	Tees		
1	1"	1 1/4"	1"	2 3/4 x 5/8"	2 x 1 1/4"	2 x 1 1/4"	400	\$200.00
2	1 1/4"	1 3/8"	1 1/4"	4 x 3/4" or 2 x 3/4"	3 x 5/16"	2 1/2 x 5/16"	1000	250.00
3	1 1/2"	1 11/16"	1 1/2"	4 x 7/8" or 4 x 3/4"	3 1/2 x 3/8"	3 x 3/8"	1175	300.00
4	1 3/4"	2"	1 3/4"	4 x 1" or 4 x 7/8"	4 x 5/8"	4 x 5/8"	1500	350.00
5	2"	2 1/4"	2"	4 1/2 x 1 1/4" or 5 x 1"	5 x 1 1/2"	4 x 3/4"	1900	400.00

NOTE—Can also be built for power. Prices on application.

ANVILS



Fig. 5291



Fig. 5292

TABLE OF APPROXIMATE ANVIL MEASUREMENTS

Wt. lbs.....	10	20	30	40	50	60	70	80
Face inches...	2x6	2 1/4 x7	2 1/2 x8	2 3/4 x9	3x9 1/2	3 1/4 x10	3 3/8 x11	3 1/2 x12
Horn inches...	3 1/2	4	5	6	6 1/2	7	7 1/2	8 1/2
Hardie Hole...	1/2	5/8	5/8	3/4	3/4	3/4	3/4	3/4
Pritchel Hole...	1/8	3/8	3/8	1/2	1/2	1/2	1/2	1/2

Wt. lbs.....	100	125	150	175	200	250	300	350
Face inches...	3 5/8 x13 1/2	3 3/4 x15	4x16 1/2	4 1/4 x17	4 1/2 x18	4 3/4 x20	5x21	5 1/2 x22
Horn inches...	9	10	10 1/2	11	11 1/2	12 1/2	13	13 1/2
Hardie Hole...	3/4	7/8	7/8	1	1 1/8	1 1/8	1 1/4	1 1/4
Pritchel Hole...	1/8	1/8	1/8	1/8	1 1/8	1 1/8	1 1/8	1 1/8

Wt. lbs.....	400	450	500	600	700	800
Face inches...	6x23	6 1/2 x24	6 3/4 x25	7x26	7 1/2 x27	8x28
Horn inches...	14 1/2	15 1/2	16	17	18	19
Hardie Hole...	1 1/8	1 1/8	1 1/2	1 1/2	1 3/4	1 3/4
Pritchel Hole...	1 1/8	1 1/8	1 1/8	1 1/8	7/8	7/8

Hardie Hole Sizes on List Indicate Size of Tool that Hardie Hole will Take

"PETER WRIGHT'S" ANVILS

85 to 350 lbs. Base.....	per lb. \$0.12	Extra for 51 to 60 lbs.....	per lb. \$0.02
Extra for 71 to 84 lbs.....	.01	Extra for 50 lbs. and lighter.....	.03
Extra for 61 to 70 lbs.....	.01 1/2		

"HAY-BUDDEN" ANVILS

Solid Wrought

Should this anvil break at the waist or its steel face become loose within one year from date of purchase, it will be replaced without charge.

80 to 425 lbs. Base.....	per lb. \$0.12	50 to 59 lbs.....	per lb. extra \$0.02
426 to 625 lbs.....	per lb. extra .00 1/2	40 to 49 lbs.....	" .03
626 to 800 lbs.....	" .01	30 to 39 lbs.....	" .05
70 to 79 lbs.....	" .00 1/2	20 to 29 lbs.....	" .08
60 to 69 lbs.....	" .01	10 to 19 lbs.....	" .15

"VULCAN" ANVILS

The face of this anvil is one solid piece of tool steel, thoroughly welded to the body of the anvil by a patented process. It is then accurately ground and tempered.

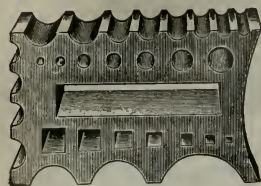
The horn is covered with, and its extremity is made entirely of tough, untempered steel.

The body of the anvil is made from superior pig iron, and being much more solid than wrought iron, the work being forged receives the full force of the blow. The face and horn of the anvil are warranted to be thoroughly welded to the body and not to separate.

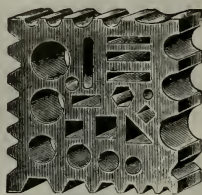
No.	Weight about lbs.	Each	No.	Weight about lbs.	Each
00	5	\$2.00	10	100	\$10.00
0	10	2.75	11	110	11.00
1	15	3.25	12	120	12.00
2	20	4.00	13	130	13.00
3	30	4.50	14	140	14.00
4	40	5.25	15	150	15.00
5	50	6.00	16	160	16.00
6	60	6.50	17 1/2	175	17.50
7	70	7.25	20	200	20.00
8	80	8.00	22 1/2	225	22.50
9	90	9.00	25	250	25.00

FOR BLACKSMITH TOOLS SEE INDEX

SWAGE BLOCKS



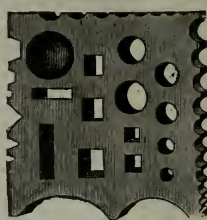
No. 0



No. 0 1/2



Nos. 1, 2 and 3



Nos. 4, 4 1/2 and 5



Fig. 530

No.	Measures inches	Weight, about pounds	No.	Measures inches	Weight, about pounds
0	4 x14x19 1/2	165	3	4 1/8 x11x15	145
0 1/2	3 3/8 x15x15	150	4	4 x15x15	165
1	3 3/8 x10x14	100	4 1/2	4 1/2 x18x18	255
2	3 3/8 x11x15	125	5	6 x24x24	625

Price, per lb. \$....

CONES OR MANDRELS

Size No.	Height inches	Diameter at Base inches	Diameter at Top inches	Estimated weight pounds	Price per lb.
1	32	8	1	55	....
1 1/2	40	10	1	90	....
2	48	12	1	115	....
3	52	14	1	140	....
4	54	16	2	200	....

HUNTINGTON EMERY WHEEL DRESSER



Fig. 398

For truing, shaping, sharpening and removing glaze from solid emery wheels running at full speed.

Patent Emery Wheel Dresser (2 sets of cutters) \$3.00

Extra cutters per set .50

COLTON'S FILE CARD



Fig. 384

Steel back, frame and face. Tempered steel wire bristles. Furnished with soft steel tapered pick. (The Pick to remove any obstinate filing or substance which may have become imbedded deeply between the teeth of the file and which does not at first yield to the brush. Each cleaner wrapped in waxed paper. Packed one dozen in telescope pasteboard box. One gross in wooden case. Weight 38 lbs. per gross.

Price, per dozen \$3.50

FOR FILES AND EMERY WHEELS, SEE INDEX

SLEDGES**BLACKSMITHS'****Fig. 5401. Cross Pein**

5 lbs. and over.....	per lb.	\$0.30
3 to 5 lbs.....	"	.40
Under 3 lbs.....	"	.50

**Fig. 5402. Double Face**

5 lbs. and over.....	per lb.	\$0.30
3 to 5 lbs.....	"	.40
Under 3 lbs.....	"	.50

**Fig. 5403. Double Face Striking Hammers**

5 lbs. and over.....	per lb.	\$0.30
3 to 5 lbs.....	"	.40
Under 3 lbs.....	"	.50

**Fig. 5404. Stone Sledge Hammers**

5 lbs. and over.....	per lb.	\$0.30
3 to 5 lbs.....	"	.40
Under 3 lbs.....	"	.50

**Fig. 5405. Coal Sledges**

5 lbs. and over.....	per lb.	\$0.30
3 to 5 lbs.....	"	.40

HAMMERS**Fig. 5406. Single Face Mason Hammers**

5 lbs. and over.....	per lb.	\$0.50
3 to 5 lbs.....	"	.55
Under 3 lbs.....	"	.60

Double Face, same price as Single Face

**Fig. 5407. Spalling Hammers**

5 lbs. and over.....	per lb.	\$0.40
3 to 5 lbs.....	"	.55
Under 3 lbs.....	"	.60

Double Face, same price as Single Face

**MASH****Fig. 5408. Stone Cutters' or Hand-Drilling Hammers**

5 lbs. and over.....	per lb.	\$0.40
3 to 5 lbs.....	"	.50
Under 3 lbs.....	"	.55

MAULS**Fig. 5409. Ship**

4 to 8 lbs.....	per lb.	\$0.42
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**Fig. 5410. R. R. Spike**

5 lbs. to 12 lbs.....	per lb.	\$0.30
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BLACKSMITHS' AND STRUCTURAL TOOLS

BLACKSMITHS' PUNCHES

Square



Fig. 1260

Approximate Weights.

Size	Weight	Size	Weight
$\frac{1}{4}$ to $\frac{3}{8}$ in.	1 lb. 12 oz.	$\frac{3}{4}$ in.	2 lb. 8 oz.
$\frac{7}{8}$ to $\frac{1}{2}$ in.	1 lb. 14 oz.	$\frac{7}{8}$ to 1 in.	3 lb.

Sold at actual scale weights only.

Size..... $\frac{3}{8}$ to 1 in.
 Price, per lb..... \$0.42

BLACKSMITHS' PUNCHES

Round



Fig. 1270

Size	Approximate Weights.	Weight
$\frac{1}{4}$ to $\frac{5}{8}$ in.		1 lb. 12 oz.
$\frac{3}{4}$ and $\frac{7}{8}$ in.		2 lb. 8 oz.
1 in.		3 lb.

Sold at actual scale weights only.

Size..... $\frac{3}{8}$ to 1 in.
 Price, per lb..... \$0.42

BACKING-OUT PUNCHES



Fig. 1321A

Weight, about 2 lb. 8 oz.

Price, per lb.....\$0.80

BUTTON HEAD RIVET SETS



Fig. 1060D

		Weight
For $\frac{3}{8}$ -inch rivet.....Cup	$\frac{3}{4}$ in.	3 $\frac{3}{4}$ lb.
For $\frac{1}{2}$ -inch rivet.....Cup	$\frac{3}{4}$ in.	3 $\frac{3}{4}$ lb.
For $\frac{5}{8}$ -inch rivet.....Cup	1 $\frac{1}{8}$ in.	5 lb.
For $\frac{3}{4}$ -inch rivet.....Cup	1 $\frac{1}{8}$ in.	5 lb.
For $\frac{7}{8}$ -inch rivet.....Cup	1 $\frac{1}{8}$ in.	6 $\frac{3}{4}$ lb.
For 1-inch rivet.....Cup	1 $\frac{1}{8}$ in.	6 $\frac{3}{4}$ lb.

3 to 5 lb. per lb. \$0.75

5 lb. and over..... per lb. .70

Special requirements furnished as specified.

BOILER PICKS



Fig. 1070

Weight, 1 to 2 $\frac{1}{2}$ lbs.

Price, per lb.....\$0.75

SIDE CHISELS



Fig. 1320A

Weight, about 4 lb. 8 oz.

Price, per lb.....\$0.80

BLACKSMITHS' COLD CHISELS



Fig. 1290

Approximate Weights

Size	Weight	Size	Weight
1 in.	1 lb.	1 $\frac{1}{2}$ in.	3 lb.
1 $\frac{1}{8}$ in.	1 lb. 8 oz.	1 $\frac{3}{4}$ in.	4 lb.
1 $\frac{1}{4}$ in.	2 lb.	1 $\frac{7}{8}$ in.	4 lb. 12 oz.
1 $\frac{3}{8}$ in.	2 lb. 8 oz.		

Sold at actual scale weights only.

Sizes in square.....1 to 1 $\frac{1}{4}$ in. by eighths

Price, per lb..... \$0.42

RIVET BUSTER



Fig. 351

Crucible Tool Steel

Weight, 5 lbs.....per lb. \$0.50

DRIFT PINS



Size at largest diam.	Fig. 1060C Length	Weight
$\frac{9}{16}$ in.	6 $\frac{1}{2}$ in.	5 oz.
$\frac{5}{8}$ in.	7 in.	7 $\frac{1}{2}$ oz.
$\frac{11}{16}$ in.	7 $\frac{1}{2}$ in.	8 oz.
$\frac{3}{4}$ in.	8 in.	10 oz.
$\frac{13}{16}$ in.	8 in.	12 oz.
$\frac{7}{8}$ in.	8 $\frac{3}{4}$ in.	1 lb.
1 in.	9 in.	1 lb. 2 oz.

Price, per lb.....\$0.80

Sold at actual scale weights only.

Specify exact size required.

FOR HANDLES TO FIT ABOVE, SEE INDEX

BLACKSMITHS' AND FARRIERS' TOOLS



Fig. 546A
Top Swage



Fig. 546B
Bottom Swage

All sizes.....per lb., \$0.42



Fig. 546C

HARDIES

$\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1 and $1\frac{1}{4}$ inch
shanks.....per lb., \$0.42



Fig. 546D
Bottom Fuller



Fig. 546E
Top Fuller

All sizes.....per lb., \$0.42



Fig. 546F
Cold Cutter

BLACKSMITHS'
CHISELS



Fig. 546G
Hot Cutter

$1\frac{1}{4}$, $1\frac{3}{8}$ and $1\frac{1}{2}$ inches.....per lb., \$0.42



Fig. 546H

Fig. 546H SET HAMMERS

$1\frac{1}{4}$ to 2 inches, by eighths.....per lb., \$0.42



Fig. 546I

Fig. 546I FLATTERS

2 to 4 inches, by quarters.....per lb., \$0.42



Fig. 546J

BLACKSMITHS' PINCERS

Oil Finished, Polished Jaws.

Sizes, inches.....	10	12	14
Per dozen.....	\$9.00	10.00	12.00

HORSE SHOES—Light, Medium and Heavy

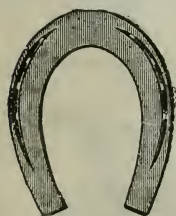


Fig. 619A. Fore

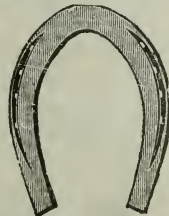


Fig. 619B. Hind

Burden's Shoes.....	per lb., \$.....
Perkins' Shoes.....	"
Perkins' extra light pattern, Nos. 1 to 4, front and hind.....	"
Mule Shoes.....	"



Fig. 546K

FARRIERS' KNIVES

Wostenholm's horn handles, $\frac{5}{8}$ and $\frac{3}{4}$
inch blades.....per doz., \$6.00
Extra blades....." " 4.50

STEEL TOE CALKS



Fig. 619C
One Prong, Blunt



Fig. 619D
One Prong, Sharp

Nos. 0, 1, 2, 3, 4, 5, 6

All sizes, one prong, blunt.....	per lb., \$0.10
All sizes, two prong, blunt.....	" .11
All sizes, one prong, sharp.....	" .12 $\frac{1}{2}$
All sizes, two prong, sharp.....	" .13 $\frac{1}{2}$

HORSE SHOE NAILS

Boss, 25-lb. boxes.....	per lb., \$0.32
Leader, 25-lb. boxes.....	" .28

FOR HANDLES TO FIT ABOVE TOOLS, SEE INDEX

BLACKSMITH'S TONGS

Order by Figure Number

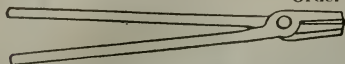


Fig. 731. Straight Lip

Length in inches.....	14	16	18	20	22
Weight, lbs., per doz....	18	21	24	30	36
Length in inches.....	24	26	28	30	
Weight, lbs., per doz.....	39	42	45	48	
Price per lb.....	\$0.30				

Weights given are approximate only.

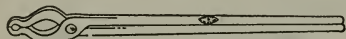


Fig. 741. Single Pick Up

Single Pick Up Tongs.....per lb., \$0.40
Same weight as straight lip.

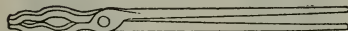


Fig. 742. Double Pick Up

Double Pick Up Tongs.....per lb., \$0.40
Same weight as straight lip.

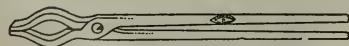


Fig. 743. Rivet Tong

Rivet Tongs.....per lb., \$0.60
Same weight as straight lip.

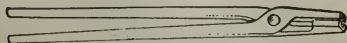


Fig. 772. Lathe Tool Tong

Lathe Tool Tongs.....per lb., \$0.60
Weights same as straight lip.

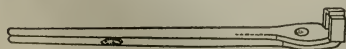


Fig. 773. Pick Tong

Pick Tongs.....per lb., \$0.60
Weights same as straight lip.

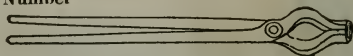


Fig. 732. Curved Lips or Bolt. Fluted Jaw

To hold	Length
$\frac{1}{4}$ and $\frac{5}{16}$ in. round.....	18 in.
$\frac{3}{8}$ and $\frac{1}{2}$ in. round.....	20 in.
$\frac{5}{8}$ and $\frac{3}{4}$ in. round.....	22 in.
$\frac{7}{8}$ to $1\frac{1}{4}$ in. round.....	24 in.
$1\frac{1}{2}$ to 2 in. round.....	26 in.

Weights same as straight lip.

Price, per lb.....\$0.30

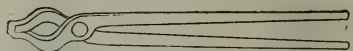


Fig. 751. Gad Tong

Gad Tongs.....per lb., \$0.40
Weights same as straight lip.

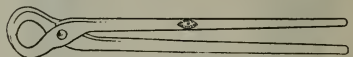


Fig. 752. Bolt Tong

Bolt Tongs.....per lb., \$0.40
Weights same as straight lip.

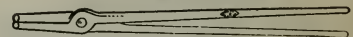


Fig. 753. Round Jaw Tong

Round Jaw Tongs.....per lb., \$0.40
Weights same as straight lip.

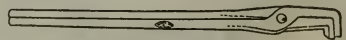


Fig. 761. Angle Jaw Tong

Angle Jaw Tongs.....per lb., \$0.60
Weights same as straight lip.

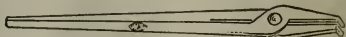


Fig. 763. Clip Tong

Clip Tongs.....per lb., \$1.20
Weights same as straight lip.

FOR BOLTS, RODS, IRON AND STEEL. SEE INDEX

STRUCTURAL TOOLS



Fig. 531A. Flogging Hammer

Weight, 5 to 8 lbs....
.....per lb., \$0.20



Fig. 531B. Plugging Hammer

Weight, 2 to 3 lbs.....
.....per lb., \$0.25



Fig. 531C. Riveting Hammer

Weight, 2 to 3 lbs....
.....per lb., \$0.35



Fig. 531D. Straight Dolly

Price, each\$2.50



Fig. 531E. Club Dolly

Price, each\$2.75

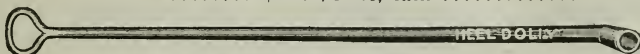


Fig. 531F. Heel Dolly

Price, each\$4.25



Fig. 531G. Spring Dolly

Price, each\$7.00



Fig. 531H. Diamond Pointed Chisels.

3 lbs.each, \$1.00



Fig. 531I. Gouges.

3 lbs.each, \$1.00

THE DOUBLE-JAW DRILLING POST

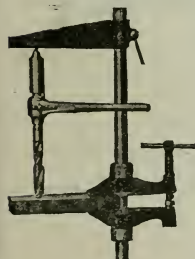


Fig. 531J

No. 1 is suitable for drilling all size holes up to $\frac{3}{4}$ inch. Radius of arm 10 inches, weight 25 pounds.

No. 2 is extra strong. Post is long enough to take No. 5 ratchet and drill up to $1\frac{1}{2}$ inch hole. Radius of arm 12 inches, weight 33 pounds.

The jaws of both sizes open 4 inches. Can be made special to open any distance. The screws are made of tool steel and tempered. The screw in the lower jaw has a cup-shaped head, a guide and seat for top screw. The screws can be reversed.

No. 1.....each, \$ 8.00
No. 2....." 10.00

OLD MAN

Cut shows method of operation, including Drill.

Nos. 1 2

Height of post, in. 20 26

Radius of arm, in. 10 12

Each ...\$8.00 10.00

Drill Not Included in Price.

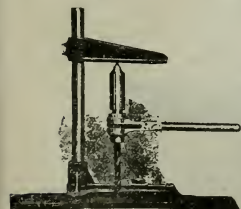


Fig. 531K

RIVETING CLAMPS

FOR AIR
HAMMERS,
SEE INDEX

FOR AIR
COMPRESSORS,
SEE INDEX



Fig. 531L

Each\$6.00

POWDER OR CATCHING CANS

For catching hot rivets in all structural steel work. Made with heavy 2" reinforced bottom and also plain.

Reinforced bottom,
each\$1.00

Plain bottom, each... .50



Fig. 531M

FOR RIVETS, STRUCTURAL SHAPES AND BARS, SEE INDEX

COLD AND TRACK CHISELS AND PUNCHES

All good quality cold chisels look alike as far as the quality of the steel is concerned, but all chisels do not act alike when in the hands of the workman. No tool is given such hard usage as a cold chisel and usually they are not made better than need be.

To make good chisels care must be given to the quality of the steel, the process by which forged, the shaping and tempering.

In these chisels a high grade of crucible steel is used, forged-up by the use of a hammer, and shaped and tempered properly. Chisels are oil finished, with turned heads.

COLD CHISELS

First Quality

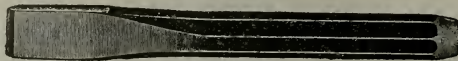


Fig. 539A

Order all chisels by the diameter of octagon steel and not by the width of blade.

Size of octagon steel.....inches	3/16	3/8	5/16	3/4	7/8	1	1 1/8	1 1/4	1 1/2
Size of blade approximate.....inches	3/4	5/8	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2
Average length.....inches	4 1/2	5	5 1/4	5 3/4	6	6 3/4	7 1/2	8	8 1/2
Average weight.....lbs.	1	1 1/2	2	2 1/4	2 1/2	3	3 1/2	4	4 1/2
Number packed in box.....	12	12	12	12	12	6	6	6	6
List.....per doz.	\$1.40	1.50	1.70	2.00	2.60	3.50	5.00	6.50	8.50

COLD CHISELS, LONG SIZES

Size of octagon steel.....inches	3/8	1/2	5/8	3/4	7/8	1
Average length.....inches	10	10	10	10	10	10
Number packed in box.....	6	6	6	6	3	3
List.....per doz.	\$3.00	4.00	5.00	6.50	7.50	10.00

MACHINIST'S CAPE CHISELS

First Quality, Crucible Steel



Fig. 539B

Size of octagon steel.....inches	3/4	5/16	3/8	1/2	5/8	3/4	7/8	1
Size of cutting edge.....inches	1 1/4	1 1/8	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
List.....per doz.	\$2.00	2.00	2.25	3.00	4.00	6.00	8.00	10.00

ROUND NOSE CAPE CHISELS

First Quality, Crucible Steel



Fig. 539C

Size of octagon steel.....inches	3/4	5/16	3/8	1/2	5/8	3/4	7/8	1
Size of point.....inches	1 1/4	1 1/8	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
List.....per doz.	\$2.00	2.00	2.25	3.00	4.00	6.00	8.00	10.00

ROUND NOSE CHISELS

First Quality, Crucible Steel



Fig. 539D

Size of octagon steel.....inches	3/4	5/16	3/8	1/2	5/8	3/4	7/8	1
Size of point.....inches	1 1/4	1 1/8	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
List.....per doz.	\$2.00	2.00	2.25	3.00	4.00	6.00	8.00	10.00

DIAMOND POINT CHISELS

First Quality, Crucible Steel

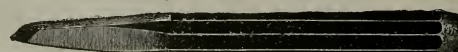


Fig. 539E

Size of octagon steel.....inches	3/4	5/16	3/8	1/2	5/8	3/4	7/8	1
Size of point.....inches	1 1/4	1 1/8	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
List.....per doz.	\$2.00	2.00	2.25	3.00	4.00	6.00	8.00	10.00

TRACK CHISELS



Fig. 539F

Each
per lb.
1 1/4 in. square, tool steel, 4 1/2 lbs.....\$0.40

MACHINISTS' HAND PUNCHES



Fig. 539G

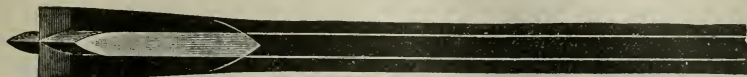
Made of high grade crucible steel. Forged with plenty of clearance at heel.

Order by Size of Point.

Size of point.....inches	3/32	4/32	5/32	3/16	1/4	5/16
Size of oct. steel.....inches	3/4	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
Length.....inches	5	5	5	6	6 1/2	6 1/2
Number in box.....	12	12	12	12	6	6
List.....per doz.	\$1.75	2.00	2.00	2.50	3.00	3.00

CONCRETE AND STONEMEN'S TOOLS

STAR DRILLS



For Brick, Concrete or Stone

Hammer forged from a high grade of Octagon Crucible Steel. Relieved cutting edge to prevent choking. Not blunt nor stubby. Properly tempered.

List Price Per Dozen.

Size of Bit, in. . .	3/4	1	1 1/4	1 1/2	1 3/4	2
Size of Stock, in. .	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4
Length, 12 in. . . .	\$2.50	3.15	3.75	4.25	5.00	7.50
Length, 18 in. . . .	3.75	4.75	6.65	6.40	7.50	11.25
Length, 24 in. . . .	5.00	6.25	7.50	8.50	10.00	15.00

Prices of Drills of intermediate diameters, same as next size larger. Drills of large diameter, or greater lengths than listed, furnished to order promptly at proportionate list prices.

LONG BRICK CHISELS

For Cutting Through Brick Walls

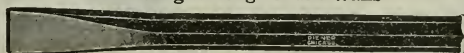


Fig. 532E

Hammer forged of a high grade of octagon crucible steel, properly tempered. Blade is forged wider than shank to prevent choking up. Order by length of chisel.

Length, inches	15	18	24	30
Size of steel, inches.	5/8	3/4	7/8	1
Per dozen	\$6.00	\$9.00	\$16.00	\$24.00

STONE CUTTERS' PLAIN CHISELS



Fig. 532E

Size Octagon Steel, in.	Length inches	Width Blade inches	Est'd Wt. per doz. pounds	Per pound
5/8	7 1/2	1 1/2	7 3/4	\$0.33
5/8	7 1/2	1 3/4	8	.33
5/8	7 1/2	2	8	.33
5/8	7 1/2	2 1/4	8	.33
5/8	7 1/2	2 1/2	8 1/4	.33
1 1/8	7 1/2	2 3/4	8 1/2	.33
1 1/8	7 1/2	3	9	.33
3/4	8	3 1/2	10	.33

STONE CUTTERS' TOOTH CHISELS



Fig. 532F

Size Octagon Steel, in.	Length inches	Width Blade inches	Est'd Wt. per doz. pounds	Per pound
5/8	8	1 1/2	8	\$0.33
5/8	8	1 3/4	8	.33
5/8	8	2	8 1/4	.33
5/8	8	2 1/4	9	.33
5/8	8	2 1/2	9 1/2	.33
1 1/8	8	2 3/4	11	.33
1 1/8	8	3	12	.33

DRILLS

For Stone, Marble and Granite. Made of Fine Tool Steel.

Ball Drills.



Fig. 532C.

Length	Approximate Weight	Each
7 feet	8 pounds	\$3.00

PLUGS AND FEATHERS

Length inches	Hole inches	Per Set
3	5/8	\$0.20
4 1/2	3/4	.25
6	7/8	.35
8	1	.50



Fig. 532D

FOR SLEDGES, MAULS AND STRIKING HAMMERS, SEE INDEX

PICKS AND MATTOCKS

RAILROAD OR CLAY PICK



Fig. 5850

Weight, lbs...	4 to 5	5 to 6	6 to 7	7 to 8
Per doz.....	\$13.00	14.00	15.00	16.00
Weight, lbs.....		8 to 9	9 to 10	
Per doz.....		\$18.00	20.00	

DRIFTING PICK



Fig. 5851

Wt., lbs...	3	4	4 1/2	5	6
Per doz...\$	12.50	14.00	15.60	16.00	17.50

TAMPING PICK



Fig. 5852

Weight, lbs.....	6 to 7	7 to 8	8 to 9
Per doz.....\$	18.00	19.00	20.00

FIREMEN'S COAL PICK



Fig. 5853

Weight, lbs.....	4 1/2	5	6
Per doz.....\$	17.00	18.00	20.00

STONE PICKS



Fig. 5854

5 to 8 lbs.....	per lb. \$0.40
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QUARRY PICKS



Fig. 5855

5 to 8 lbs.....	per lb. \$0.40
-----------------	----------------

POLL PICKS

Solid Steel



Fig. 112

	Weight lbs.	Per dozen		Weight lbs.	Per dozen
No. 1	3 1/2	\$15.00	No. 4	5	\$18.50
No. 2	4	16.00	No. 5	6	20.00
No. 3	4 1/2	17.00	No. 6	7	21.50

ADZE EYE MATTOCKS



Fig. 5856

	Weight lbs.	Cutter inches	Blade inches	Per dozen
Long cutter.....	6	2 5/8 x 4 7/8	3 1/2 x 7 1/4	\$17.00
Short cutter	5 1/2	2 3/8 x 4 5/8	3 1/2 x 6 1/2	16.50

PICK MATTOCKS



Fig. 5857

Weight, 6 lbs.....	per doz. \$17.00
Weight, 5 lbs.....	" 16.00

ASPHALT MATTOCK

Oil Finished

Single Cutter



Fig. 5858

Weight, 7 lbs.....	per doz. \$23.00
Weight, 8 lbs.....	" 24.00
Weight, 9 lbs.....	" 25.00

Double Cutter Mattocks



Fig. 5859

Weight, 9 lbs.....	per doz. \$25.00
Weight, 10 lbs.....	" 30.00
Weight, 12 lbs.....	" 35.00

FOR HANDLES TO FIT ABOVE, SEE INDEX

FORKS—GRUB HOES



Fig. 589A

COAL FORKS

No. of Tines	Length Tine inches	Distance Between inches	Per doz.
8	16	1 1/8	\$20.00
8	16	1 1/8	20.00
9	16	1	22.00
10	16	7/8	25.00
10	16	1	25.00
12	16	1	29.00
12	14	5/8	29.00
14	15 1/2	3/4	33.00
14	16 1/2	1/2	33.00

SHAVING FORKS

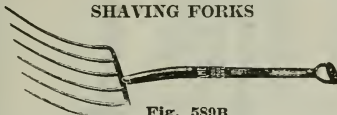


Fig. 589B

No. of Tines	Distance Between Tines inches	Per doz.
6	3	\$22.00
8	3	24.00

CLAY FORKS

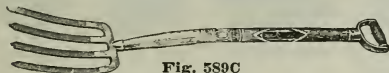


Fig. 589C

Extra Heavy Per doz. \$14.00

STONE HOOKS



Fig. 589D

With 5 ft. handles, 1 3/4 inch teeth.

4 teeth, medium ... per doz. \$13.00

4 teeth, extra heavy. " 15.50

4 teeth, round, heavy " 15.00

5 teeth, extra heavy. " 20.50

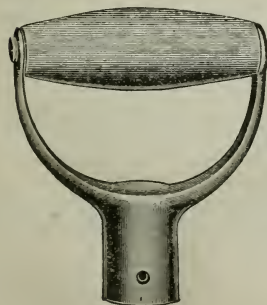


Fig. X228

FORK HANDLES

Malleable "D" top with wood grip. Price, per doz. \$2.50

We can furnish D handles with iron grip if desired

FOR HANDLES TO FIT ABOVE TOOLS, SEE INDEX



Fig. 589E

COKE FORKS

No. of Tines	Length Tines inches	Distance Between inches	Per doz.
10	17	1 1/4	\$24.00
12	18	1 1/4	28.00
12	18	1	28.00
14	19	1 1/4	33.00
14	17	1	33.00
16	17	1	40.00
16	17	3/4	40.00

HEAVY STONE FORKS

Square Tines

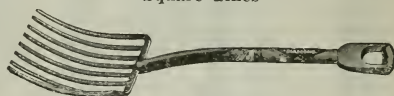


Fig. 589F

No. of Tines	Width of Fork inches	Per doz.
8	10 1/2	\$20.00
10	13	25.00
12	13	29.00
14	13	33.00

HANSEN CAISSON FORKS



Fig. 589G

Extra Heavy, short tine. Per doz. \$15.00

S. & S. HAMMER HEAD GRUB HOES



Fig. 589H

Extra Heavy, Pick Eye
Weight, each, 8 lbs.

Per doz. \$18.00

GRUB HOES

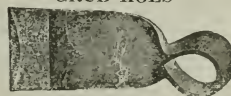


Fig. 589I

Nos.	1	2	3
Weight, lbs.	3 1/2	4	4 1/2
Per doz.	\$13.00	13.50	14.00
Same as above, extra heavy, about 5 3/4 lbs., Price, per doz.	\$15.00		

"CARPENTER" SHOVELS

Our "Carpenter" brand of Shovels and Scoops is strictly high grade in every respect, being made of the best materials it is possible to procure for the purpose. We particularly recommend "Carpenter" Shovels and Scoops for the most severe service.



Fig. 587A



Fig. 587B



Fig. 587C



Fig. 587D



Fig. 587E



Fig. 587F



Fig. 587G

"CARPENTER" SHOVELS

D or Long Handles, Square or Round Points

Nos. 587A, 587B, 587C and 587G

No. 2.	Black.	Size	9 1/2 x 11 3/4 inches.....	per doz.	\$16.50
No. 3.	Black.	Size	10 1/4 x 12 1/2 inches.....	"	17.00
No. 4.	Black.	Size	10 7/8 x 13 1/2 inches.....	"	17.50
No. 5.	Black.	Size	11 3/4 x 13 1/2 inches.....	"	18.00
No. 6.	Black.	Size	12 x 14 inches.....	"	18.50

"CARPENTER" SEWER SHOVELS

No. 587D

No. 2.	Black.....	per doz.	\$16.50
For Polished, add \$1.00 per dozen, net.			

"CARPENTER" MOULDER SHOVEL

No. 587E

No. 2.	Moulders' Shovel	per doz.	\$16.50
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"CARPENTER" SPADES

No. 587F

No. 2.	Black	per doz.	\$16.50
For Polished, add \$1.00 per dozen, net.			

"CARPENTER" SHOVELS



Fig. 588C Fig. 588D

Fig. 588E

Fig. 588F Fig. 588G

"CARPENTER" COAL SHOVELS

No. 588G

Back Strap

No. 1. Black. Size $13\frac{1}{4} \times 13\frac{3}{4}$ inches... per doz. \$17.00No. 2. Black. Size $14\frac{1}{4} \times 14\frac{3}{4}$ inches... " 17.50No. 3. Black. Size $14\frac{1}{4} \times 15$ inches... " 18.00

Hollow Back, \$1.00 per doz. less.

Fig. 588H Fig. 588L

"CARPENTER" GRAIN AND COAL SCOOPS

No. 588E

Hollow Back

No. 2.	Size 11	x15	inches.....	per doz.	\$16.00
No. 3.	Size $11\frac{1}{4}$	x15 $\frac{1}{2}$	inches.....	"	16.50
No. 4.	Size $11\frac{1}{2}$	x16	inches.....	"	17.00
No. 5.	Size 12	x16 $\frac{1}{2}$	inches.....	"	17.50
No. 6.	Size $12\frac{1}{4}$	x17	inches.....	"	18.00
No. 7.	Size $13\frac{1}{4}$	x17	inches.....	"	18.50
No. 8.	Size $13\frac{1}{2}$	x17 $\frac{1}{4}$	inches.....	"	19.00
No. 9.	Size 14	x17 $\frac{3}{4}$	inches.....	"	19.50
No. 10.	Size $14\frac{1}{2}$	x18 $\frac{1}{2}$	inches.....	"	20.00

Polished, \$0.50 per doz. advance.

"CARPENTER" ASPHALT SHOVEL

No. 588C

No. 2..... per doz. \$22.00

"CARPENTER" DRAINING AND DITCHING SPADES

Nos. 588D and 588F

14 inch.....	per doz.	\$21.00
16 inch.....	"	21.50

"CARPENTER" TELEGRAPH SHOVELS

Nos. 588A and 588B

6 ft. handles. Black.	Extra long strap....	per doz. \$20.50	Regular strap....	per doz. \$20.50
7 ft. handles. Black.	Extra long strap....	" 22.50	Regular strap....	" 22.50
8 ft. handles. Black.	Extra long strap....	" 24.50	Regular strap....	" 24.50

"CARPENTER" TELEGRAPH SPOONS

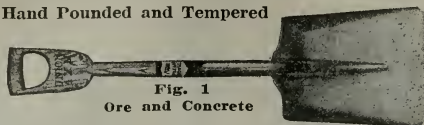
Nos. 588H and 588L

6 ft. handles. Black.....	per doz.	\$24.00
7 ft. handles. Black.....	"	24.00
8 ft. handles. Black.....	"	26.00

For Polished, add \$1.00 per dozen, net.

CONNEAUT SPECIAL SHOVELS

Hand Pounded and Tempered

Fig. 1
Ore and Concrete

RONBERG ORE AND CONCRETE SHOVELS

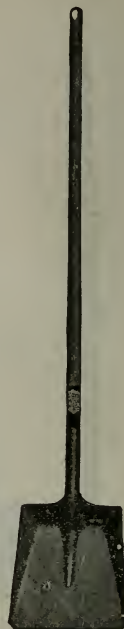
MIKKOLA'S FAMOUS PATENT

Fig. 1 to 5 and X1 to X5

The best square point shovel for any work but tamping railroad ties. Regular 26 inch D handle with 19 inch drop. Drop tempered point Annealed blade. Long handle 4½ feet, 30 inch drop.

This is the shovel that will not wedge the material in the blade, is self-sharpening, is used by the majority of construction companies for concrete, and by brick companies for sand, shale and clay shoveling. It is lighter than other makes of same size, yet holds more material, wears longer, and is liked better by the men. Not manufactured in solid back.

No.	Size of Blade		D Handle Fig. No.	Long Handle Fig. No.	Price per doz.
	Width inches	Length inches			
2	10	12	1	X1	\$16.00
3	10½	12½	2	X2	16.50
4	11	13	3	X3	17.00
5	11½	13½	4	X4	17.50
6	12	14	5	X5	18.00

Fig. 15 Street
CommissionerFig. 11
CoalFig. X1
Ore and
Concrete

MAGYAR COAL SHOVELS—STREET COMMISSIONERS' SHOVELS

Fig. 11 to 18

This shovel is used extensively by the lime companies for filling purposes. Its straight point will not crush the material handled as the high-sided scoop does, and the drop and straight point cleans the entire width of blade, as it is shoved in. Regular D handle, 26 inches long with 20 inch drop; long handle, 4 feet, 6 inches. Any length of handle furnished on request. The street commissioners' shovels are also used as firing shovels. They are 4 feet 6 inches long and have a 30 inch drop.

No.	Size of Blade		Coal Shovel Fig. No.	Street Commissioner Shovel, Fig. No.	Price per doz.
	Width inches	Length inches			
1	13¼	14	11	15	\$16.00
2	14½	15	12	16	16.50
3	15½	16	13	17	17.00
5 Coke	14½	17	14	18	18.50

STANDARD STYLE SPECIAL TRACK SHOVEL

HAND POUNDED AND TEMPERED

High carbon steel "Harveyized" point. The shovel to stand the prying. D handle 26 inches long, with 19 inch drop; 12 gauge steel. Any length of D or long handle on request, or 14 gauge steel when not wanted so heavy. If desired, we will furnish these shovels with malleable D handles at same list price.

Size No.	D Handle Fig. No.	Long Handle Fig. No.	Price per doz.
2	19	X19	\$16.00
3	20	X20	16.50
4	21	X21	17.00
5	22	X22	17.50
6	24	X23	18.00
7	24	X24	18.50

For polished, add \$1.00 per dozen, net.



Fig. 10. Track

CONNEAUT SPECIAL SHOVELS

HAND POUNDED AND TEMPERED

To avoid mistakes please order Shovels by number

MIKKOLA PATENT RONBERG D HANDLE SHOVEL WITH HIGH SIDES

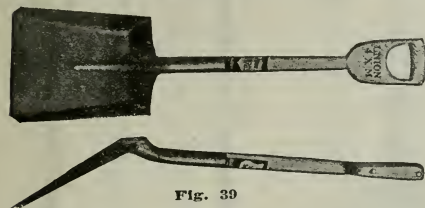


Fig. 39

Not manufactured in solid back. The wet concrete shovel. D handle 26 inches long with 19 inch drop. Non-tempered sides extending to point.

Size No.	Long Handle No.	D Handle No.	Price Per Doz.
2	X39	39	\$16.00
3	X40	40	16.50
4	X41	41	17.00
5	X42	42	17.50
6	X43	43	18.00

THE SCIENTIFIC ROUND POINT SHOVEL

Special Iron Mining and Sewer Shovel

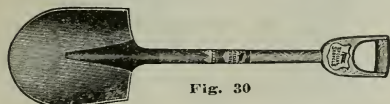


Fig. 30

Manufactured to overcome the weak points of the common line of shovels. Tempered point; strong where handle joins blade; long rib in center, making it impossible to break through the center.

D handle 26 inches long, with 18 inch drop.

Size No.	No.	Price Per Doz.
2	30	\$16.00
3	31	16.50
4	32	17.00
5	33	17.50
6	34	18.00

COAL SHOVELS



Fig. CS

D handle, regular standard coal shovel. Regular handle 26 inches long, 20 inch raise. Any length D or long handle or raise supplied on request.

Tempered Point, High Carbon Blade, XX Handles As Good as Can Be Made

Size No.	D Handle No.	Long Handle No.	Price Per Doz.
1	68	X68	\$16.00
2	69	X69	16.50
3	70	X70	17.00

SQUARE AND ROUND POINT, D HANDLE SOCKET STRAP SHOVEL

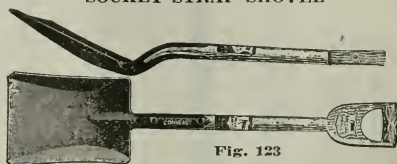


Fig. 123

Regular 14 gauge steel, polished 13 gauge. Any gauge on special order.

Tempered on point where the wear comes, the rest of blade annealed, making it soft where the strain comes, giving the longest wearing life without danger of breaking where other solid back shovels do.

Regular 26½ inch D handle, 19 inch drop, 14 gauge.

For railroad work, 12 gauge and malleable D if desired.

Size	Square No.	Round No.	Price per Doz.
2	123	215	\$16.00
3	124	216	16.50
4	125	217	17.00
5	126	218	17.50
6	127	219	18.00
7	128	220	18.50

THE DAVIDSON

Special for Sand and Wet Material



Fig. 25

A shovel with an absolutely flat bottom, high turned sides, tempered point. D handle 26 inches long with 20 inch drop. Any length D and long handles furnished on request.

Size No.	D Handle No.	Long Handle No.	Price Per Doz.
2	25	X25	\$16.00
3	26	X26	16.50
4	27	X27	17.00
5	28	X28	17.50
6	29	X29	18.00

MOULDERS' SHOVELS

The Best Moulders' Shovel Made



Fig. 129

Size No.	No.	Price per Doz.
2	129	\$17.00

For polished, add \$1.00 per dozen, net.

CONNEAUT SPECIAL SPADES AND SHOVELS

HAND POUNDED AND TEMPERED



Fig. 240



Fig. 300



Fig. 221



Fig. 226



Fig. 205



Fig. 235

Fig. 221-226 SPECIAL DRAIN TOOLS

Socket strap, plain back. D or long handle. Blades are made from 14 to 22 inches long. We can furnish you with a $4\frac{1}{2}$ foot long handle at the same price. If long handles are wanted prefix "X" to the list number.

Fig. 221 Drain, Polished

Fig. 226 Ditching, Polished

Blade Length inches	Fig. No.	Price per dozen	Blade Length inches	Fig. No.	Price per dozen
14	221	\$19.00	14	226	\$19.00
16	222	20.00	16	227	20.00
18	223	21.00	18	228	21.00
20	224	22.00	20	229	22.00
22	225	23.00	22	230	23.00

Fig. 232 SPECIAL SPADE

Long or D Handle. Plain Back, Socket Strap

Tempering this Spade on the point only, it will keep an even sharp edge, which is so hard to get in the regular spade.

Size	D Handle Fig. No.	Long Handle Fig. No.	Price per dozen
2	232	X232	\$17.00
3	233	X233	17.50

Fig. 295 "HOT STUFF" OR ASPHALT SHOVEL

Solid shank, Shelby tubular steel handle and wood "D". Weight 7 to $7\frac{1}{2}$ lbs. each. Round or square point. Regular D handle 38 inches long from back of blade.

Size 2. No. 295. Price per doz.....\$24.00

Fig. 300 SPECIAL NURSERY SPADE

Weight $6\frac{1}{2}$ to 7 lbs. each. Used also for excavating, clay tunneling and where only the strongest possible tool is wanted.

No. 300. Price per doz.....\$24.00

Fig. 234 "SOLID SOCKET" SPADES

Size 2. D Handle No. 234. Long Handle No. X234. Price per doz.....\$17.00

Fig. 235 "SOLID SOCKET" SQAPE POINT

Size 2. D Handle, No. 235. Long Handle, No. X235. Price per doz.....\$17.00

Fig. 240 "SOLID SOCKET" IRRIGATION SHOVEL

Size 2. No. X240. Long Handle only. Price per doz.....\$17.00

Fig. 241 "SOLID SOCKET" MOULDERS

(Not Illustrated)

Size 2. D Handle, No. 241. Long Handle, No. X241. Price per doz.....\$17.00

In ordering shovels always be sure to specify figure number.

For polished, add \$1.00 per dozen, net.



Fig. 234



Fig. 232

CONNEAUT SPECIAL LONG HANDLED SHOVELS AND SPOONS

HAND POUNDED AND TEMPERED



Fig. 49



Fig. X117



Fig. X111



Fig. X243 Fig. X242

Fig. 49 LONG HANDLED, ROUND POINT, BLAST FURNACE AND SEWER TRENCH SHOVEL
Handle $4\frac{1}{2}$ feet long, 30 inch drop.

Size No.	Long Handle Fig. No.	Price Per Doz.	Size No.	Long Handle Fig. No.	Price Per Doz.
2	49	\$16.00	5	52	\$17.50
3	50	16.50	6	53	18.00
4	51	17.00			

Fig. X117 SQUARE POINT STRAP BACK SOCKET STRAP SHOVEL.

$4\frac{1}{2}$ foot handle, 34 inch drop at end. Any drop on order. 14 gauge steel regular, 13 gauge or 12 gauge on order.

Size No.	Fig. No.	Price Per Doz.	Size No.	Fig. No.	Price Per Doz.
2	X117	\$16.00	5	X120	\$17.50
3	X118	16.50	6	X121	18.00
4	X119	17.00	7	X122	18.50

SPECIAL PLAIN BACK SOCKET STRAP

Fig. X111 Long Handle Round Point Shovel, Hand Pounded and Tempered

A plain back, long handle, round point, with $4\frac{1}{2}$ foot handle, 34 inch drop at end of handle. 14 gauge stiff point regular. Spring point if wanted.

Size No.	Fig. No.	Price Per Doz.	Size No.	Fig. No.	Price Per Doz.
2	X111	\$16.00	5	X114	\$17.50
3	X112	16.50	6	X115	18.00
4	X113	17.00	7	X116	18.50

Figs. X242-X243 WESTERN UNION PATTERN TELEGRAPH SPOONS AND SHOVELS

All with 6 foot Handles

\$1 per doz. advance for each foot longer and \$1 per doz. advance for longer straps.

No. X242. Spoons—Size No. 2, 9 inch strap, per doz. \$24.00
No. X243. Shovels—Size No. 2, 9 inch strap, 6 foot handle " 20.00
Be sure and state what length handle and strap is wanted. 6 foot handle and 9 inch strap is furnished.

For polished, add \$1.00 per dozen, net.

CONNEAUT SPECIAL SCOOPS



Fig. 54



Fig. 102



Fig. B61



Fig. C53

Fig. 54. CONNEAUT SPECIAL SCOOP

With Harveyized Point—26 inch D Handle, 20 inch Drop

Designed to shove into the load with the least effort; keep a true, even edge; clean the surface shoveled from without running out at corners; and by reason of tempered point, wear the longest.

WESTERN PATTERN—D or Long Handle

Size No.	Blade		D Handle Fig. No.	Long Handle Fig. No.	Price per dozen
	Width, inches	Length, inches			
4	12	16	54	X54	\$17.00
5	12½	16½	55	X55	17.50
6	13	17	56	X56	18.00
7	13½	17½	57	X57	18.50
8	14	18	58	X58	19.00
9	14½	18½	59	X59	19.50
10	15	19	60	X60	20.00
11	15½	19½			
12	15½	20			

We can furnish the Eastern pattern scoops with narrow mouth if wanted. Price upon application.

Fig. 102. RIVETED BACK SCOOPS

Also Made with Diamond Point if Desired

Fig. No.	Size	Retail Price per dozen	Fig. No.	Size	Price per dozen
102	2	\$17.50	107	7	\$22.50
103	3	18.50	108	8	23.50
104	4	19.50	109	9	24.50
105	5	20.50	110	10	25.50
106	6	21.50			

Fig. B61. SPECIAL GAS HOUSE AND FURNACE CHARGING SCOOP

Gas manufacturers know how hard it is to get a scoop that is hung right. Here is one that is right in every way 26 inch D handle, 8 inch lift at ends.

Long handle or any lift on order.

Size No.	D Handle Fig. No.	Long Handle Fig. No.	Price per dozen	Size No.	D Handle Fig. No.	Long Handle Fig. No.	Price per dozen
2	B61	XB61	\$16.00	5	B64	XB64	\$17.50
3	B62	XB62	16.50	6	B65	XB65	18.00
4	B63	XB63	17.00				

Fig. C53. DIAMOND POINT BREAKING DOWN SCOOP

For breaking down from the top of cars and getting to the bottom when a square point scoop will not work. This scoop will save its cost on each car of coal or stone unloaded.

Size No.	D Handle, Fig. No.	Price per dozen	Size No.	D Handle, Fig. No.	Price per dozen
3	C53	\$16.50	6	C56	\$18.00
4	C54	17.00	7	C57	18.50
5	C55	17.50	8	C58	19.00

For polished, add \$1.00 per dozen, net.

"SUCCESS" SHOVELS AND SCOOPS

"Success" Shovels and Scoops are good, serviceable tools, and are designed to last. Where price is a factor in the purchase of Shovels, the "Success" brand is the best value for the money.



Fig. 589A



Fig. 589B



Fig. 589C



Fig. 589D



Fig. 589E



Fig. 589F



Fig. 589G

"SUCCESS" SHOVELS

D or Long Handles, Square or Round Points

Nos. 589A, 589B, 589C and 589G

No. 2.	Black.	Size $9\frac{1}{2} \times 11\frac{3}{4}$ inches.....	per doz.	\$10.50
No. 3.	Black.	Size $10\frac{1}{4} \times 12\frac{1}{2}$ inches.....	"	11.00
No. 4.	Black.	Size $10\frac{7}{8} \times 13\frac{1}{2}$ inches.....	"	11.50
No. 5.	Black.	Size $11\frac{3}{8} \times 13\frac{1}{2}$ inches.....	"	12.00
No. 6.	Black.	Size 12×14 inches.....	"	12.50
No. 2.	Tamping Shovel with malleable handles.....		\$2.00 per doz. advance	

"SUCCESS" SEWER SHOVEL

No. 589E

No. 2.	Black.....	per doz.	\$10.50
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"SUCCESS" SPADES

No. 589F

No. 2.	Black.....	per doz.	\$10.50
No. 2.	Polished.....	"	11.50

"SUCCESS" GRAIN AND COAL SCOOPS

No. 589D

Hollow Back.

No. 2.	Size 11×15 inches.....	per doz.	\$10.00
No. 3.	Size $11\frac{1}{4} \times 15\frac{1}{2}$ inches.....	"	10.50
No. 4.	Size $11\frac{1}{2} \times 16$ inches.....	"	11.00
No. 5.	Size $12 \times 16\frac{1}{2}$ inches.....	"	11.50
No. 6.	Size $12\frac{1}{4} \times 17$ inches.....	"	12.00
No. 7.	Size $13\frac{1}{4} \times 17$ inches.....	"	12.50
No. 8.	Size $13\frac{1}{2} \times 17\frac{1}{4}$ inches.....	"	13.00
No. 9.	Size $14 \times 17\frac{3}{4}$ inches.....	"	13.50
No. 10.	Size $14\frac{1}{2} \times 18\frac{1}{2}$ inches.....	"	14.00

All polished, \$1.00 per doz. net advance.

GENUINE AMES SHOVELS



Fig. 20



Fig. 38



Fig. 45



Fig. 51



Fig. 25



Fig. 343

No. 20. D HANDLE, PLAIN BACK, SQUARE POINT SHOVELS

Cast Steel Edge, Plated Plain Back

No. 0. Black	.....List price per doz.	\$21.50	Polished,
No. 1. Black	.....List price per doz.	21.50	Polished, \$22.50
No. 2. Black	.....List price per doz.	21.75	Polished, 22.75
No. 3. Black	.....List price per doz.	22.75	Polished, 23.75
No. 4. Black	.....List price per doz.	23.50	Polished,
No. 5. Black	.....List price per doz.	23.50	Polished,
No. 6. Black	.....List price per doz.	24.50	Polished,
No. 6. Black	.....List price per doz.	25.50	Polished,

No. 38. D HANDLE, PLAIN BACK, ROUND POINT SHOVELS

Cast Steel Edge, Plated Back

No. 1. Black	.....List price per doz.	\$22.50	Polished, \$23.50
No. 2. Black	.....List price per doz.	22.75	Polished, 23.75
No. 3. Black	.....List price per doz.	23.50	Polished, 24.50
No. 4. Black	.....List price per doz.	24.25	Polished,
No. 5. Black	.....List price per doz.	25.25	Polished,
No. 6. Black	.....List price per doz.	27.00	Polished,
No. 7. Black	.....List price per doz.	29.00	Polished,

No. 45. LONG HANDLE, PLAIN BACK, SQUARE POINT SHOVELS

Cast Steel Edge, Plated Plain Back

No. 0. Black	.....List price per doz.	\$21.50	Polished,
No. 1. Black	.....List price per doz.	21.50	Polished, \$22.50
No. 2. Black	.....List price per doz.	21.75	Polished, 22.75
No. 3. Black	.....List price per doz.	22.75	Polished, 23.75
No. 4. Black	.....List price per doz.	23.50	Polished,
No. 5. Black	.....List price per doz.	24.50	Polished,

No. 51. LONG HANDLE, PLAIN BACK, ROUND POINT SHOVELS

Cast Steel Edge, Plated Plain Back

No. 0. Black	.....List price per doz.	\$21.50	Polished,
No. 1. Black	.....List price per doz.	21.50	Polished, \$22.50
No. 2. Black	.....List price per doz.	21.75	Polished, 22.75
No. 3. Black	.....List price per doz.	22.75	Polished, 23.75
No. 4. Black	.....List price per doz.	24.50	Polished,

SEWER SHOVELS

No. 25. D HANDLE, PLAIN BACK, SQUARE POINT

Cast Steel Edge, Plated Plain Back

No. 0. Black	.....List price per doz.	\$21.50	Polished,
No. 1. Black	.....List price per doz.	21.50	Polished, \$22.50
No. 2. Black	.....List price per doz.	21.75	Polished, 22.75
No. 3. Black	.....List price per doz.	22.75	Polished, 23.50
No. 4. Black	.....List price per doz.	23.50	Polished, 24.50
No. 5. Black	.....List price per doz.	24.50	Polished, 25.50
No. 6. Black	.....List price per doz.	25.50	Polished,

No. 343. MOULDERS' SHOVELS

Patent Plain Back, D Handle, Square Point

No. 2. List price per doz.	\$24.00
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FOR DUMP WAGONS, CONCRETE CARTS AND WHEELBARROWS, SEE INDEX

GENUINE AMES SPADES AND SCOOPS



Fig. 703 Reinforced



Fig. 77



Fig. 1022



Fig. 1007



Fig. 1017



Fig. 90



Fig. 703 Regular

No. 703. SCOOPS
Crucible Cast Steel, Polished

Size	per doz.	Size	per doz.
2.	\$26.00	9.	\$30.50
3.	26.50	10.	31.00
4.	27.00	11.	33.50
5.	27.50	12.	32.25
6.	28.00	13.	33.25
7.	28.75	14.	34.75
8.	29.50		

Extra reinforced, add \$1.00 net, per dozen, to above list.

Double reinforced, add \$2.00 net, per dozen, to above list.

Black Round-point, or Breaking-down Scoops same price as Polished Scoops of corresponding size.

Fig. 77. D HANDLE SPADE
Cast Steel Edge, Plated Plain Back

Size 2.	per doz. \$22.00
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Fig. 1022. POLISHED CONCAVE OR POST SPADE
Patent Crucible Cast Steel

Tapers from 6 inches at point, to 5 1/2 inches at shoulder.

Inches long.....	14	16	18	20	22
Per dozen.....	\$24.25	\$24.75	\$25.25	\$25.75	\$26.25

Fig. 1007. POLISHED DRAIN SPADE No. 2
Patent Crucible Cast Steel

Tapers from 5 1/2 inches at shoulder, to 4 1/4 inches at point.

Inches long.....	16	18	20	22	24
Per dozen.....	\$24.75	\$25.25	\$25.75	\$26.75	\$27.00

Fig. 1017. POLISHED D HANDLE DITCHING SPADE
Patent Crucible Cast Steel

Tapers from 6 1/2 inches at point, to 5 inches at shoulder.

Inches long.....	14	16	18	20	22
Per dozen.....	\$24.25	\$24.75	\$25.25	\$25.75	\$26.25

Fig. 90. D HANDLE DOUBLE STRAP NURSERY SPADES
Cast Steel Edge, Plated Plain Back

Size 2.	per doz. \$26.50
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MISCELLANEOUS SHOVELS

KING TILING

22x6 1/2 inches.....	per doz.	\$40.00
22x4 1/2 inches.....	"	36.50



Fig. 5876

CONCRETE FACING

Fig. 5877
Long HandleFig. 5878
D Handle

Per doz.....	\$30.00
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CARPENTER'S BANNISTER SPECIAL CONCRETE SPADE



Fig. D30. Side View



Fig. D30A. Front View.

Hand Pounded and Tempered

Size of blade, 12 inches long, 8 inches wide.

Designed for forcing the concrete back from the forms and allowing the thin mixture to run out against the forms. It is the only spade that will not clog up and become unfit for use if neglected, as the concrete will not stick to it as it does to some others, and for this reason any laborer can use it and get just as good results as a skilled man, and it is not as expensive as others. Designed by one of the most practical concrete men in the world.

Fig. No. D 30. Size No. 2.....	per doz.	\$24.00
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SNOW SHOVELS

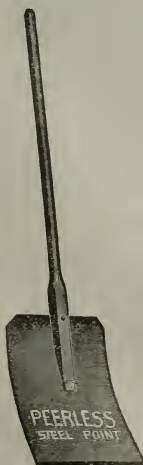


Fig. 01

STEEL POINT SNOW SHOVEL

No. 1. Blade 12x18 in. long handle..	per doz..	\$6.00
No. 01. Blade 12x18 in. D handle....	per doz.	6.50



Fig. 5892

ONE PIECE SNOW SHOVEL,
D HANDLE

12x14 inch blade, weight 55 lbs.....	per doz.	\$5.80
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Fig. 5891

ONE PIECE SNOW SHOVEL,
LONG HANDLE

12x14 inch blade, weight 55 lbs.....	per doz.	\$4.80
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NO ORDER FOR SHOVELS IS TOO LARGE TO TAX OUR STOCK.

HANDLES

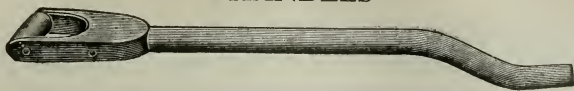


Fig. X233

D Shovel Handle, Ames' Bend

Fig. X233. D Bent Shovel. List price.....per doz. \$7.40



Fig. X234

D Spade Handle

Fig. X234. D Bent Spade. List price.....per doz. \$7.10



Fig. X241

D Scoop Handle

Fig. X241. D Bent Scoop. List price.....per doz. \$7.40



Fig. X242

D Shovel, Spade or Scoop, Bent

Fig. X242. D Shovel, Spade or Scoop, Bent.....per doz. \$7.10



Fig. X253

Malleable D Manure Fork Handle

Fig. X253. Malleable Iron D Manure Fork. List price.....per doz. \$6.60



Fig. X254

Malleable D Spading Fork

Fig. X254. Malleable Iron D Spading Fork. List price.....per doz. \$6.90



Fig. X261

D Spading and Manure Fork, with Strap Ferrule and Cap

Fig. X261. List price.....per doz. \$11.40



Fig. 262

D Coke Fork, Heavy Strap Ferrule and Cap

Fig. 262. D Coke and Coal Fork. List price.....per doz. \$11.60

Unless otherwise specified, heavy strapped ferrules will be furnished on D Coke Fork Handles.

FOR OTHER KINDS OF HANDLES, SEE INDEX

HANDLES

Our Handles are manufactured from selected material, thoroughly finished and carefully assorted. They are the standard grade of the market. All Handles are exceptionally well finished with a hard gloss finish, and are packed one dozen in a bundle.

CHUCKING AND BORING

Unless otherwise specified, all fork, rake and hoe handles will be bored and chucked. We can, however, furnish handles not bored if desired, if you will so state on your order.

Where weights are shown, they cover handles tied and ready for shipment. Considering the wide range of sizes, grades and other details, these figures are of necessity, an estimate only. They are not guaranteed, but are sufficiently accurate for use as a basis of estimate.



Fig. X8

Straight Hay Fork Handles

4 1/2 foot, weight per doz. 22 lbs.	\$3.60	6 1/2 foot, weight per doz. 32 lbs.	\$ 8.30
5 foot, weight per doz. 24 lbs.	4.20	7 foot, weight per doz. 33 lbs.	10.00
5 1/2 foot, weight per doz. 26 lbs.	5.10	8 foot, weight per doz. 41 lbs.	14.20
6 foot, weight per doz. 30 lbs.	6.70		



Fig. X9

Bent Hay Fork Handles

4 foot, weight per doz. 20 lbs.	\$3.90	5 1/2 foot, weight per doz. 26 lbs.	\$6.00
4 1/2 foot, weight per doz. 22 lbs.	4.40	6 foot, weight per doz. 30 lbs.	7.70
5 foot, weight per doz. 24 lbs.	5.00		



Fig. X16

Bent Manure Fork Handles

4 foot, weight per doz. 22 lbs.	\$3.90	4 1/2 foot, weight per doz. 26 lbs.	\$4.40
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Fig. X18

Garden Rake Handle

4 1/2 foot, weight per doz. 16 lbs.	\$3.90	6 foot, weight per doz. 21 lbs.	\$6.20
5 1/2 foot, weight per doz. 18 lbs.	4.70		



Fig. X201

Long Shovel Handle, Ames Bend

4 1/2 foot	per doz. \$5.70
------------------	-----------------



Fig. X202

Long Scoop Handle

4 1/2 foot	per doz. \$5.70
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Fig. X203

Long Shovel Handle

4 1/2 foot	per doz. \$5.00
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FOR OTHER KINDS OF HANDLES, SEE INDEX.

HANDLES

All our extra grade handles are made from selected young second growth hickory, the toughest wood known for handles of all kinds. All handles are pure white in color and are absolutely free from knots or branch joints.

Number 1 handles are also made of hickory, but are not so clear in color, there being more or less red in them, due to branch joints.

We also carry Pick handles, made from ash for those who specially require them of this wood.



Fig. 559A. Sledge



Fig. 559B. Maul

Maul, sledge, 34 and 36 inches.....	per dozen, extra	\$6.70	No. 1	\$4.60
Maul, sledge, 32 and 30 inches.....	“ extra	5.60	No. 1	3.70
Maul, sledge, 28 and 26 inches.....	“ extra	5.00	No. 1	3.20
Maul, sledge, 24 inches.....	“ extra	4.00	No. 1	2.80
Wood post maul handles.....	“ extra	5.60		



Fig. 559C. R. R. Pick or Mattock

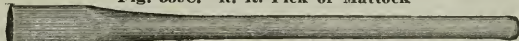


Fig. 559D. Drifting Pick or Grub Hoe

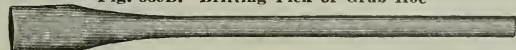


Fig. 559E. Poll Pick

Length, 36 inches.....per dozen, extra \$11.50; No. 1 \$6.50



Fig. 559F. Adze

Price, per dozen, extra.....\$10.00; No. 1 \$5.60



Fig. 559H. Single Bit Axe

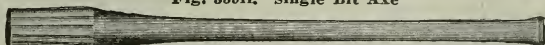


Fig. 559G. Double Bit Axe

Axe, single bit.....	per doz.	Extra \$9.80	No. 1 \$4.90
Axe, double bit.....	“	9.80	4.90



Fig. 559L. Soldering Copper Handle

Price, per dozen.....\$0.30



Fig. 559M. File.

File Handles, assorted.....	per dozen	\$0.30
File Handles, No. 2.....	“	.30
File Handles, No. 3.....	“	.40
File Handles, No. 4.....	“	.40



Fig. 559H. Adze Eye Hammer



Fig. 559I. Machinists



Fig. 559J. Blacksmiths

Length, 11 to 15 inches.....	per dozen	Extra \$1.60
Length, 16 inches.....	“	1.75
Length, 18 inches.....	“	2.00
Length, 20 inches.....	“	2.25
Length, 22 inches.....	“	2.50
Length, 24 inches.....	“	2.80



Fig. 559K. Hatchet—Broad, Bench or Shingle

Length, 12 and 13 inches.....	per dozen	\$1.60
Length, 14 and 15 inches.....	“	1.70
Length, 16 inches.....	“	1.90
Length, 18 inches.....	“	2.25

FOR TOOLS TO FIT ABOVE HANDLES, SEE INDEX

SCREENS—RIDDLES—CHUTES

For Screening Coal, Coke, Gravel, etc. Oak Frame



Fig. 20 Plain Screen

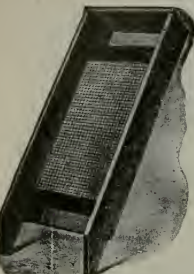


Fig. 22 Challenge Coal Screen



Fig. 126 Foundry Riddle

No.	Size Inches	Wgt. lbs.	Each	No.	Size Inches	Wgt. lbs.	Each
19	34x76	101	\$15.00	1	34x81	118	\$17.25
20	31x69	86	12.00	2	31x74	106	14.25

No. 26. SAND SCREEN

No small wires are used to wear out quickly, leaving the screening surface loose and uneven. The frames are not weakened by numerous holes bored to receive the ends of the wires. The surface is perfectly even, so that sand is not retarded in its downward course. The wires cannot be displaced to form irregular openings. The screen is constructed so the wear will be borne proportionately on all parts.

	Size, in.	Wgt. lbs.	Each
Small	22x60	35	\$6.00
Large	26x66	42	7.50

No. 22. "CHALLENGE" COAL SCREENS

Oak Frame—Steel Wire—Double Crimped—Japanned

	Size, in.	Each
No. 22	29x71	\$7.50

Fig. 126. FOUNDRY RIDDLES

Round

One-half Dozen in a Bundle

GALVANIZED, HEAVY WIRE, REGULAR RIMS

Stock Numbers or Meshes	Diameter	List Price, doz.
2, 3, 4, 5, 6	16 inches	\$ 9.00
	18 inches	10.75
8, 10, 12	20 inches	13.50

STEEL, HEAVY WIRE, REGULAR RIMS

Stock Numbers or Meshes	Diameter	List Price, doz.
2, 3, 4, 5, 6	16 inches	\$7.50
	18 inches	8.25
8, 10, 12, 14	20 inches	9.00

If made with 2 cross bars, price \$0.08 dozen net extra.
If made with 4 cross bars, price \$0.12 dozen net extra.

All of our foundry riddles are made with liner or bottom inside the rim, supporting the wire cloth and preventing it from pulling out or sagging.

Fig. 127. HARDWARE RIDDLES

Elm Rims. Steel Wire. One-half Dozen in a Package

All made with heavy cross bars, as shown in cut.

Diameter	Stock Numbers or Meshes	List Price doz.
16 inches	2 to 12 Mesh Steel Wire	\$5.50
18 inches	2 to 12 Mesh Steel Wire	6.00
20 inches	2 to 12 Mesh Steel Wire	9.00
16 inches	14 to 24 Mesh Steel Wire	8.00
18 inches	14 to 24 Mesh Steel Wire	8.50
20 inches	14 to 24 Mesh Steel Wire	11.50

RIDDLE USES

No. 2, used for Gravel.
No. 3, Beans and Coarse Sand.
No. 4, Corn and Masons' Sand.
Nos. 5 and 6, Fine Sand.
No. 8, Wheat, Rye and Barley.
Nos. 8, 10 and 12, White Mortar and Putty.
Nos. 14 and 24, Bakers and Confectioners.

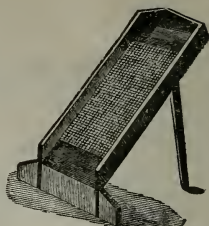


Fig. 2 Screen with Foot Board and Leg

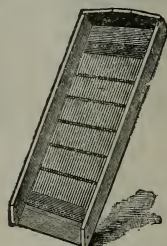


Fig. 26 Steel Wire Painted Frame

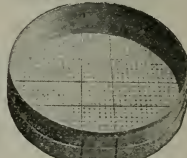


Fig. 127 Hardware Riddle

ANGLE EXTENSION COAL CHUTE

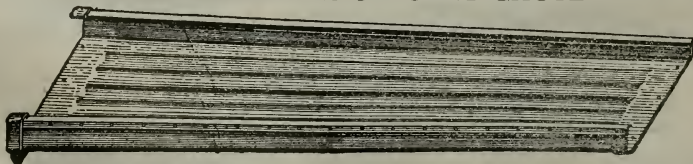


Fig. 15

Above represents the Angle Extension Chute. It is adapted to indefinite extension and chutes coal any distance, whether it be fifteen or fifty feet. When not used for extension, each section is an independent chute and may be used for sized coal, lump coal or wood.

Made in 5, 8, 10 and 12 foot Lengths

Black Iron.....per foot \$0.50 Galvanized Iron.....per foot \$0.60

FOR SHOVELS, WHEELBARROWS AND CARTS, SEE INDEX

WHEELBARROWS

BULL FROG



Fig. 25A-4

The handles are made of hardwood $1\frac{3}{4} \times 2\frac{1}{4} \times 66$ inches long, the ends tipped with sheet steel, extending forward beyond the wheel, which permits forward dumping. The legs are made of angle iron well braced, and bolted to the frame. It is equipped with "Never Break" Wheel No. 8, making a strong and serviceable barrow for general use.

No. 25A-4. Weight 60 lbs. each, 4 cu. ft. tray, doz. \$66.00
 No. 25A-3. Weight 55 lbs. each, 3 cu. ft. tray " 64.00
 No. 25A-6. Weight 65 lbs. each, 6 cu. ft. tray " 74.00

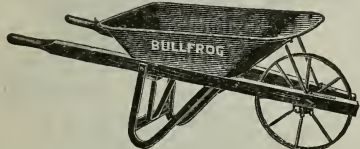


Fig. 26

It has a specially constructed angle steel leg. Furnished with No. 4 "Never Break" wheel. Weight 60 lbs. each.
 No. 26Aper doz. \$64.00



Fig. 26B-4

Furnished without the extension handles for forward dumping. Weight 58 lbs. each.
 No. 26B-4per doz. \$61.00



Fig. 31

The legs and braces are made of angle iron, which gives strength and durability and makes it the best **Pan Tray Barrow** on the market. The handles are $1\frac{3}{4} \times 2\frac{1}{4} \times 60$ inches long. Equipped without No. 4 "Never Break" wheel. Capacity 4 cubic feet. Weight 60 lbs. each. Painted brown.
 No. 31per doz. \$62.00



Fig. 42

Especially Recommended for Concrete. Equipped with **Angle Iron** wheel guard loop, which strengthens the frame and permits of forward dumping. Note the angle iron risers underneath the tray, which elevates the front end of tray so that in wheeling, the tray stands level, preventing the load from slushing over in the front. Equipped with angle iron cross pieces. No. 8 "Never Break" Wheel. Capacity 4 cubic feet. Weight 65 lbs. each.
 No. 42per doz. \$76.00

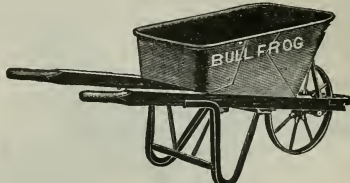


Fig. 54

Especially Recommended for Mortar. Equipped with **Angle Iron** wheel guard loop, which permits load to be dumped forward over wheel. Furnished with No. 8 Wheel. Size of tray, top 24 inches wide by 36 inches long, depth at handles 8 inches, at wheel 14 inches. Weight 72 lbs. Capacity 4 cubic feet.
 No. 54per doz. \$76.00

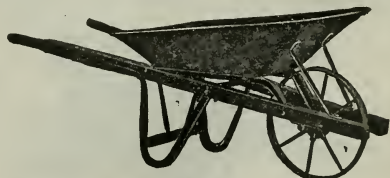


Fig. 43

Concrete Barrow. Furnished with extension handles, tipped with sheet steel in place of angle wheel guard loop. Furnished with No. 8 "Never Break" Wheel. Capacity 4 cubic feet. Weight 63 lbs. each.
 No. 43per doz. \$73.00



Fig. 44

Concrete Barrow. It is minus the wheel guard length of handles. Handles $1\frac{3}{4} \times 2\frac{1}{4} \times 60$ inches long. No. 8 "Never Break" Wheel furnished. Weight 62 lbs. each.
 No. 44per doz. \$71.00

WHEELBARROWS

BULL FROG

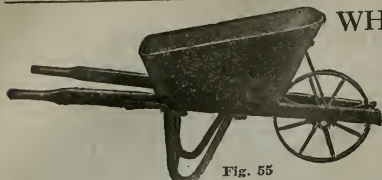


Fig. 55

Furnished with wheel guard length of handles, without angle iron wheel guard. Furnished with No. 8 Wheel. Weight 70 lbs. Capacity 4 cubic feet.
No. 55. Per doz.....\$73.00



Fig. 56

It is minus the wheel guard. Handles $1\frac{1}{2} \times 2\frac{1}{2} \times 60$ inches. Furnished with No. 8 wheel. Weight 68 lbs. each.
No. 56. Per doz.....\$71.00



Fig. 60

Has No. 8 "Never Break Wheel." Equipped with "ANGLE IRON" risers, elevating the tray to prevent slushing over in front. It is equipped with "ANGLE IRON" wheel guard loop. Tray 24 inches wide by 36 inches long, depth at handles 8 inches, at wheel 14 inches. Weight 75 lbs. each.
No. 60. Per doz.....\$82.00



Fig. 62

Has No. 8 "Never Break Wheel." It is minus the "Angle Iron" wheel guard. Weight 74 lbs. each.
No. 62. Per doz.....\$78.00



Fig. 80

This barrow is designed to take the place of the common wood tray barrow. Tray is made of a single sheet of 16 gauge steel, riveted and shaped like a common wood tray. Weight per dozen, 600 lbs.
No. 80. Per doz.....\$56.00



Fig. 75

Made of heavy angle iron, so formed that the handles, legs and wheel guard are made in one piece. Two pieces of angle iron are bolted along the bottom of the tray which supports the bottom, making the tray and frame absolutely rigid and practically indestructible. The tray is made of 14 gauge steel, the upper edge of which is beaded around a $\frac{5}{16}$ inch iron rod. Width of bottom at wheel 20 inches, width of bottom at handle 20 inches, height of tray at wheel 4 inches, height of tray at handle 18 inches, length of tray at top 39 inches. No. 12 "NEVER BREAK" wheel. Capacity 5 cubic feet. Weight 100 lbs. Painted brown.
No. 75. Per doz.....\$168.00



Fig. 10

Notice the Wheel under the load
The handles are made of inch tubing bent around in front of the wheel, which permits of forward dumping. The trays are stamped out of one piece of steel, the top edge beaded.

TABLE OF DIMENSIONS AND PRICES

No.	Ga. Steel	L. on Top in.	W. on Top in.	D. at Wheel in.	D. at Handle in.	Capacity cu. ft.	Wt.	Price each
4	15	32	28	7	5	3	70	\$5.96
4 1/2	14	32	28	7	5	3	75	6.10
8	12	32	28	7	5	3	87	6.66
5	15	37	29 1/2	9	6 1/2	4	75	6.32
7	14	37	29 1/2	9	6 1/2	4	83	6.66
9	12	37	29 1/2	9	6 1/2	4	95	7.44
12	15	42 1/2	32 1/2	11 1/2	8	6	90	8.10
10	13	42 1/2	32 1/2	11 1/2	8	6	100	8.88

BUCKEY TUBULAR STEEL WHEELBARROWS



Fig. 4

TABLE OF DIMENSIONS AND PRICES

No.	Ga. Steel	L. on Top in.	W. on Top in.	D. at Wheel in.	D. at Handle in.	Capacity cu. ft.	Wt.	Price each
4	16	32	28	7	5	3	63	\$5.50
4 1/2	15	32	28	7	5	3	65	6.00
8	14	32	28	7	5	3	70	6.50
5	16	37	29 1/2	9	6 1/2	4	65	6.50
7	15	37	29 1/2	9	6 1/2	4	68	7.10
9	14	37	29 1/2	9	6 1/2	4	80	7.70
12	16	42 1/2	33 1/2	11 1/2	8	6	83	9.00
10	14	42 1/2	33 1/2	11 1/2	8	6	88	10.00
19	16	45	40	24	14	8	100	15.00

FOR REPAIRS ON ALL ABOVE BARROWS SEE INDEX

WHEELBARROWS

STEEL CHARGING BARROWS

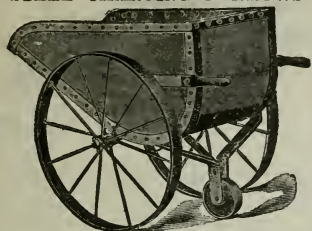


Fig. 20

Steel Charging Barrows. These are made of No. 10 steel, either with third small wheel or leg as desired.

No.	Capacity cu. ft.	Long in.	Wide in.	Deep in.	Each
20	10	54	20	21	\$50.00
21	12	54	21	25	58.00
22	14	54	24	26	65.00
23	16	56	26	28	70.00
24	20	57	28	30	80.00



Pan American

Tray 32x33 inches; depth at wheel end 11 inches, at handle end 7 1/2 inches.

With No. 13x-Steel Wheel 16 inches diam. per doz. \$48.00



Fig. 81

It has the wood legs and braces. Equipped with No. 4 "NEVER BREAK" wheel. Weight per dozen, 550 lbs.

No. 81. Per dozen.....\$62.50



Fig. 100

18 gauge steel tray, 33x32 inches, wired and beaded on edge with 5/16 inch iron rod, capacity 3 cubic feet. Wood handles and legs, braced and bolted; 16 inch steel wheel, 1 1/2 inch tire, 6 inch hub, 1/2 inch axle. Weight per dozen 525 lbs.

No. 100. Per dozen\$57.76



Fig. 11

Brick or Tile Barrow. This barrow has no mortices to rot or give out. The legs form the front part, which is strongly bolted. Barrow painted. Bottom, 23 1/4 inches wide, 24 1/2 inches long. Dash, 24 inches high by 20 inches wide. Handles, 60 inches long.

No. 11. With Steel Wheel.....per doz. \$96.00



Fig. 11A

Open Bottom Brick or Tile Barrow. Bottom, 23 inches wide, 27 inches long. Dash, 24 inches high, 20 inches wide. Handles, 60 inches long. Weight 65 lbs. each.

No. 11A. With Steel Wheel.....per doz. \$96.00



Fig. 11 1/2

Tile Barrow. Handles, 1 3/4 x 2 1/4 x 60 inches. Bed, 28x28 inches, 1 1/2 inch thick. Front board, 14 inches high. Wood legs with heavy iron braces. Equipped with our No. 8 Wheel. Weight, 72 lbs. each.

No. 11 1/2per doz. \$96.00



Fig. 13 1/2

Stone Barrow. Handles and frame made of angle steel. Length of bed 27 inches, width 24 inches. Front board 10 inches, made of 1 1/2 inch stock, well braced and bound with bar iron. Wheel, No. 10. Painted brown. Weight 65 lbs. each.

No. 13 1/2per doz. \$100.00

FOR REPAIRS ON ALL ABOVE BARROWS, SEE INDEX

WHEELBARROWS

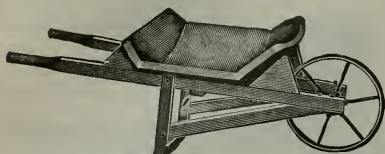


Fig. 12

No. 12. Buckeye Railway Barrow. Natural finished hardwood frame, braced and half bolted, length over all, 62 inches; $1\frac{1}{2}$ x 2 inch handles, 56 inches long; regular pieced tray, 29 inches long, 34 inches wide, 10 inches deep in front, 8 inches at rear. 16 inch steel wheel with $9\frac{1}{2}$ inch loose bolt axle; weight per dozen, 480 lbs.

Per doz. \$30.00

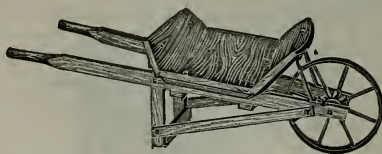


Fig. 14

No. 14. Full Bolted Barrow. Natural finish hardwood frame, well braced and full bolted, legs extended upward thus bracing the tray and bolted to same. Full size tray, 10 inches deep at handles, 8 inches at the wheel, 34 inches wide, 29 inches long on top, cleated and strapped; handles 60 inches long, $1\frac{3}{4}$ x $2\frac{1}{4}$; wheel 16 inch diameter, tire $1\frac{1}{2}$ x $\frac{1}{8}$; weight per dozen, 560 lbs.

Per doz. \$37.00

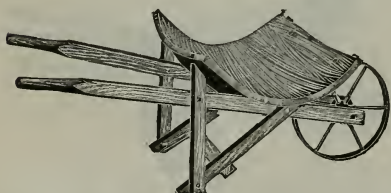


Fig. 16

No. 16. Toledo. Natural finished hardwood bolted frame, stave tray, 33 inches long, 27 inches wide, 7 inches deep, staves held by two steel bolt rods passing clear through each stave; $1\frac{1}{2}$ x 2 inch handles 56 inches long; 16 inch steel wheel, $\frac{7}{8}$ x $9\frac{1}{2}$ inch loose bolt axle, $1\frac{1}{4}$ inch tire; length over all, 62 inches; weight per dozen, 500 lbs.

Per doz. \$30.00



Fig. 7

No. 7. Garden Barrow. Hardwood handles and body, painted red and varnished, bent angle steel legs, with angle steel sockets for side boards. Handles, $1\frac{1}{2}$ x $2\frac{1}{8}$ x 56 inches; bed length inside, 28 inches, width at the handles, $20\frac{1}{2}$ inches, width at the wheels, 16 $\frac{1}{2}$ inches, side boards, $\frac{5}{8}$ x $11\frac{1}{2}$ x 31 inches; wheel, 20 inches in diameter, $1\frac{1}{2}$ x $\frac{1}{4}$ inch tire, $\frac{5}{8}$ inch axle; weight per dozen, 600 lbs.

Per doz. \$53.00

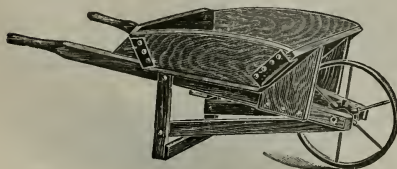


Fig. 17

No. 17. Box Barrow. Natural finish hardwood frame and box tray; half bolted; tray, $27\frac{1}{2}$ inches long, $25\frac{1}{2}$ inches wide, front board 10 inches, back 6 inches, nailed and strapped; $1\frac{1}{2}$ x 2 inch handles, 56 inches long; 16 inch steel wheel, $\frac{7}{8}$ x $9\frac{1}{2}$ inch loose bolt axle; length over all, 62 inches; weight per dozen, 600 lbs.

Per doz. \$30.00

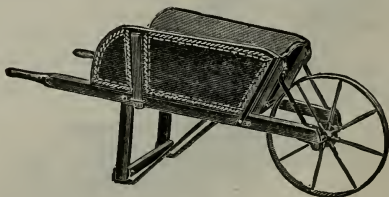


Fig. 6 1/2

No. 6 1/2. Straight Leg Garden Barrow. Hardwood body; handles, legs and braces painted red, and varnished; wheel painted black. Bed length, inside 28 inches, width at handles, $20\frac{1}{2}$ inches, width at wheel 16 $\frac{1}{2}$ inches, side boards, $11\frac{1}{2}$ x 31 inches; "Never Break" steel wheel with rivetless hub, diameter 20 inches, tire $1\frac{1}{2}$ x $\frac{1}{4}$ inches; weight per dozen, 600 lbs.

Per doz. \$48.00

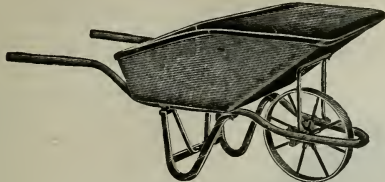


Fig. 52 S. C.

No. 52. Special Coal Barrow for dumping to windows or other openings; should have one on every coal wagon; strongly built. Dimensions of tray: Length on top 44 inches, width on top at wheel 22 inches, width on top at handles 25 inches, width on top at center 27 inches, depth at handles 9 inches, depth at center 15 inches. Capacity 350 lbs. hard coal, 500 lbs. soft coal.
Price, each.....\$12.00



Fig. 25 S. C.

No. 25. Special Coal Barrow with wood handles and angle steel truss frame. Dimensions of tray: Length on top 42 inches, width on top at wheel 27 inches, width on top at handles 25 inches, width on top at center 25 inches, depth at handles 8 inches, depth at center 12 inches. Capacity 300 lbs. hard coal, 250 lbs. soft coal.
Price, each.....\$10.50



Fig. 23 C. O.

TWO WHEEL COAL AND ORE BARROW

Tubular handles, curved up in front and bolted to the tray. Legs, $\frac{5}{8} \times 1\frac{1}{2}$ iron cross braced with $5/16 \times 1\frac{1}{2}$ iron. Axle, $1\frac{1}{2}$ inches square. Tray size, bottom $21 \times 20\frac{1}{2}$ inches, top measure 40 inches at the wheel, 31 inches inside at handles, and 44 inches long, sides and back made of 12 gauge steel; bottom and front of 10 gauge steel. Wheels, 20 inches in diameter, $14\frac{1}{2}$ inches round staggered spokes, heavy cast hub; tire, $\frac{3}{8} \times 2\frac{1}{2}$; bore $1\frac{1}{4}$ inch. Capacity, 10 cubic feet. Weight 275 lbs. Painted brown.
Price, each.....\$40.00

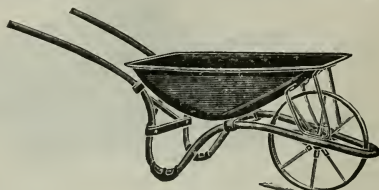


Fig. 010

TUBULAR FRAME BARROWS

This Barrow is especially constructed for use in machine shops, mines, foundries and iron mills. The frame is made of inch tubing bent so as to form the legs and handles which are joined together by heavy iron straps bolted to the bottom of the tray. The tray is stamped out of one sheet of heavy gauge steel, which makes it especially adapted for handling heavy castings, sharp castings, hot iron, etc. This barrow is heavily braced in front, which prevents the tray from pushing forward on the wheel. Our No. 8 "NEVER BREAK" wheel is furnished with this barrow unless otherwise specified.

Table of Dimensions and Prices

No.	Ga.	Length in.	Width in.	Depth in.	Cap'ty cu. ft.	Wt.	Price each
010	10	33 $\frac{1}{2}$	22 $\frac{1}{2}$	11	3	100	\$9.00
012	12	33 $\frac{1}{2}$	22 $\frac{1}{2}$	11	3	85	8.40

All the above with malleable iron shoes to protect legs.

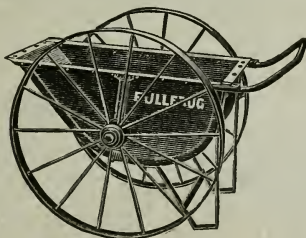


Fig. 1

"BULL FROG" CONCRETE CARTS

Strongest Concrete Cart on the market. Capacity 5 cubic feet wet concrete. Length over all 51 inches, width 36 inches. Tray, 14 gauge, reinforced with angle iron entirely around the bottom and top edge. Length 36 inches, width 21 inches, depth 16 inches. Wheels 36 inches in diameter, tire $\frac{3}{8} \times 2\frac{1}{2}$ inches, $14\frac{1}{2}$ -inch round spokes, cast iron hubs, $1\frac{1}{4}$ inch axle.
No. 1. Weight 200 lbs. Each.....\$28.00

No. 2

Tray, 14 gauge, reinforced with angle iron entirely around the bottom and top edge. Length 39 inches, width 21 inches, depth 20 inches. Capacity 6 cubic feet wet concrete. Length over all 54 inches, width 35 inches. Wheels 44 inches in diameter, $\frac{3}{8} \times 2\frac{1}{2}$ inch tire, $16\frac{1}{2}$ -inch round spokes, cast iron hubs, 2 inch axle.
No. 2. Weight 225 lbs. Price, each.....\$36.00

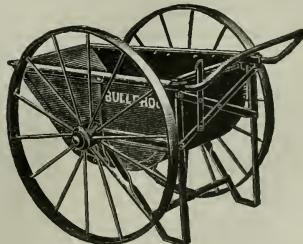
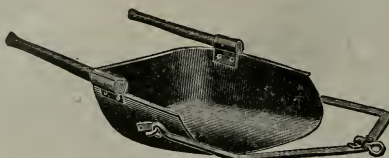


Fig. 3

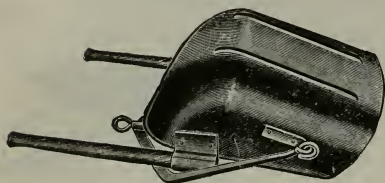
This Cart is constructed so that by releasing a strong spring clip the tray dumps, the handles and legs remaining stationary, preventing the cart from running back on the man handling the cart. Capacity 5 cubic feet wet concrete. Length over all 51 inches, width 36 inches. Tray, 14 gauge, reinforced with angle iron entirely around the bottom and top edge. Width 21 inches, length 36 inches, depth 16 inches. Wheels 36 inches diameter, tire $\frac{3}{8} \times 2\frac{1}{2}$ inches, spokes $14\frac{1}{2}$ -inch round. Cast iron hubs and malleable axle $1\frac{1}{4}$ inch.
No. 3. Weight 210 lbs. Price, each.....\$34.00

FOR REPAIRS ON ALL ABOVE BARROWS AND CARTS, SEE INDEX

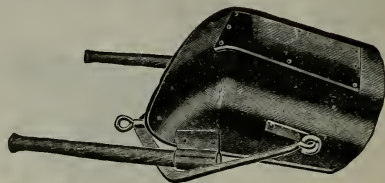
PRESSED STEEL SCRAPERS



Top View of Scraper



Scraper with Runners



Scraper with Double Bottom

DRAG SCRAPERS

The Bowl is pressed from a single sheet of high carbon special rolled scraper steel, and is without lap or seam, will scour perfectly in any kind of soil, and offers no obstruction to the dirt as it enters or leaves the bowl.

The Sides at the front are not sheared off, but are carried up on a line with the top, which prevents the dirt from spilling on the haul, keeps the run way smooth and avoids unnecessary wear on the point upon return from the dump.

The Flange stiffens the bowl, in fact is equal to binding same around the top with angle iron, and is an advantage the buyer will readily appreciate.

The Bail is made of solid forged steel, strong and durable enough to withstand the greatest strain.

The Swivel is of malleable iron which turns freely in reinforced socket, permitting a side dump if desired.

The Hooks and Handle Sockets are of heavy steel securely riveted and spot welded in place.

The Runners of special hardened steel, fastened to the bottom with spot weld or countersunk rivets.

The Extra Bottom Plate is also attached to the bottom by countersunk rivets, and is used on all double bottom scrapers.

The Handles are made of best quality hard wood.

Be sure to give general description in ordering.

Made under three different brands, as follows:

"BULL FROG"

With flat handles on side.

"MAUMEE"

With round handles on top.

"BUCKEYE"

With round handles on side.

No.	Description	Capacity cu. ft.	Size inches	"Bull Frog"		"Maumee"		"Buckeye"	
				Wt., lbs.	Price	Wt., lbs.	Price	Wt., lbs.	Price
1	Without runners	7	34x33x10	84	\$8.88	81	\$8.60	73	\$7.90
2	Without runners	5	32x30x 9 1/2	81	8.20	78	7.90	66	7.20
3	Without runners	3	32x26x 9 1/2	73	7.80	67	7.50	62	6.80
1	With runners...	7	34x33x10	90	9.20	87	9.00	79	8.30
2	With runners...	5	32x30x 9 1/2	87	8.60	84	8.40	72	7.60
3	With runners...	3	32x26x 9 1/2	79	8.20	73	7.90	68	7.20
1	Double bottom...	7	34x33x10	96	10.10	93	9.90	85	9.20
2	Double bottom...	5	32x30x 9 1/2	93	9.50	90	9.20	78	8.60
3	Double bottom...	3	32x26x 9 1/2	85	9.00	79	8.88	74	8.20

Note:—When ordering, be sure to advise whether scrapers are to be with or without runners or with double bottom.

Scrapers With Runners will be shipped unless specified otherwise.



Made of One Piece Steel

THE COLUMBUS

No. 1.	Capacity, 7 cubic feet; weight, 102 pounds.....	each	\$13.00
No. 2.	Capacity, 5 cubic feet; weight, 94 pounds.....	"	12.00
No. 3.	Capacity, 3 cubic feet; weight, 70 pounds.....	"	11.00
	With runners	extra	.35
	With double bottom	"	.50

FOR REPAIRS ON ALL ABOVE ARTICLES, SEE INDEX.

REPAIRS FOR SCRAPERS, BARROWS AND CARTS

DRAG SCRAPERS

Handles	Each	\$0.54
Ball	"	1.70
Swivel	"	.44
Hooks	"	.44

CONTRACTORS' WHEELBARROWS

†Handles (wood)		\$1.00
†Legs (angle iron)	Each	.54
Straight Brace between legs	"	.24
U Brace between legs	"	.24
Front Braces	"	.12
Angle Wheel Guard	"	.34
*One piece Trays (4 feet)	"	3.30
Riveted Trays (4 feet)	"	3.60
Angle Cross Pieces under tray	"	.24
Angle Risers under tray	"	.24
*NOTE: Nos. 80 and 81 Trays	"	2.20
†NOTE: No. 75 Trays	"	5.00
†NOTE: No. 75 Handles and Legs	Pair	4.50

BRICK AND TILE BARROWS

Bent Legs	Each	\$1.10
Handles	"	.70
Straight Legs	Pair	.70
Iron Leg Brace	Each	.36
Iron Front Brace	"	.34

STONE BARROWS

Angle Iron Handles	Each	\$2.20
Angle Wood Handles	"	.70

CART REPAIRS

36 inch Wheels	Each	\$6.60
40 inch Wheels	"	8.80
Hubs and Hangers	Pair	2.80
Washers	Each	.14
Legs	Pair	1.40
Handles	Each	.90
Bodies (5 feet)	"	13.00
Bodies (6 feet)	"	16.00

FOR WHEELS SEE NEXT PAGE

TUBULAR (ALL STEEL) BARROWS

Trays

Gauge Steel	Length on Top inches	Width on Top inches	Depth at Wheel inches	Depth at Handles inches	Capacity cubic feet	Price
16	32	28	7	5	3	\$2.74
15	32	28	7	5	3	3.20
14	32	28	7	5	3	3.70
16	37	29 1/2	9	6 1/2	4	3.30
15	37	29 1/2	9	6 1/2	4	3.50
14	37	29 1/2	9	6 1/2	4	3.70
16	42 1/2	33 1/2	11 1/2	8	6	3.70
14	42 1/2	33 1/2	11 1/2	8	6	4.00
16	49	40	24	14	8	8.30
12	32	28	7	5	3	3.50
12	37	29 1/2	9	6 1/2	4	4.00
15	42 1/2	32 1/2	11 1/2	8	6	3.80
13	42 1/2	32 1/2	11 1/2	8	6	4.20
10	33 1/2	22 1/2	11	....	3	4.50

Tubular Frame (legs and handles)	Each	\$3.30
Cross Braces for No. 010	"	.24
Straight Braces for No. 010	"	.24
Shoes (malleable)	"	.24
Front Braces for "Bull Frog"	"	.44
Handles for "Bull Frog"	"	3.76
Legs for "Bull Frog"	"	.56
U Braces (legs) for "Bull Frog"	"	.34
Straight Braces for "Bull Frog"	"	.34
Axle Boxes for "Bull Frog"	Pair	.36
Frame complete (no tray or wheel)	Each	3.90
Front Braces Buckeye Tubular	"	.14
Handles, Buckeye Tubular	"	2.76
Legs	"	.50
Leg Braces	"	.36
Frame, less tray and wheel	"	3.90

"NEVER BREAK" WHEELS—TOOL WAGONS AND CARTS



With
Rivetless
Hub

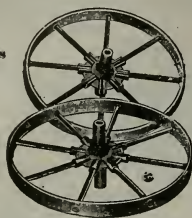


TABLE OF SIZES
(Order by Number)

No.	Dia.	Tire	Spokes	Hub	Axle	Wt.	Price
1	16	1 1/4 x 1/4	6—3/8	6	1/2	8	\$0.90
2	16	1 1/2 x 1/4	6—3/8	6	1/2	8 1/2	1.00
3	16	1 1/2 x 1/4	8—3/8	7	1/2	9	1.10
4	16	1 1/2 x 3/8	8—3/8	7	1/2	10 1/4	1.20
5	17	2 x 1/4	8—3/8	7	1/2	10 1/2	1.40
6	17	1 1/2 x 3/8	8—1/2	7	5/8	12 1/4	1.50
8	17	1 1/2 x 3/8	8—1/2	7	5/8	14	1.60
10	17	1 3/4 x 3/8	8—1/2	7	5/8	14 1/2	1.70
12	17	2 x 3/8	8—1/2	7	5/8	15	1.90
14	20	1 1/2 x 1/4	8—3/8	15 to 18 Axle	3/4	12 1/4	1.60
16	20	2 x 1/4	8—3/8	15 to 18 Axle	3/4	13	1.80

FOR OTHER REPAIRS, SEE INDEX

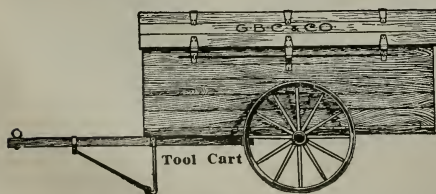
Round Steel Spokes. Wrought Iron Tire. Patent Malleable Rivetless Hub. The Latest and Best Invention in Metal Wheels for Barrows

The spokes are inserted in the hub flanges, the end of each spoke resting against the hub and then under hydraulic pressure the flanges are closed on the spokes. The spokes are secured at the tire by a counter-sunk head electrically hammered; thus combining tension and torsion strength. Experience has shown that the riveted hub in the best known wheels is the weakest point, and through racking and heavy work the rivets loosen. This invention entirely removes that defect. The superior strength of this wheel construction has been proven beyond question in long and hard usage. For a quick demonstration of its power of endurance, the tire can be hammered out of shape under power, and likewise the spokes bent out of shape, but the fastening of the spokes at the hub and the hub itself will remain solid and intact.

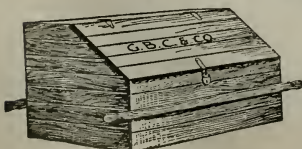
S. AND S. TOOL WAGON AND CARTS



Tool Wagon



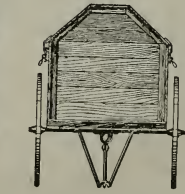
Tool Cart



Tool Box



All sills, posts and other supporting constructions are made of selected straight grain and well seasoned oak.



The sides, top and ends are of selected Norway pine, tongued and grooved. They are heavily ironed and securely bolted throughout.

The tops of wagons and carts are covered with heavy cotton duck, treated and painted, making it waterproof.

PRICES

Tool Wagon	Each	\$180.00
Tool Cart	"	120.00
Tool Box	"	15.00

EARLY BIRD

CONTRACTORS' GRADING PLOWS

WOOD BEAMS



Fig. 5771

Beams of best white oak, heavily ironed both on the upper and the lower side. Wrought steel clevis with two heavy rings. Reversible and sufficiently strong cutter. Best grade of timber in handles, which are well strapped on both sides. Hand holds made of malleable iron. Mould boards, shares and cutters made of best grade of plow steel. All parts neatly fitted together. Guard on exposed handle to protect it when dragging.

No.	Beams	Weight, lbs.	Each
0	6 ft. 6 in.	180	\$25.00
1	7 ft. 6 in.	200	29.00
2	7 ft. 6 in.	270	32.50
3	8 ft. 8 in.	350	40.00



Fig. 5772

ROOTER

Malleable Iron

Unequaled for tearing up macadamized pavements, cement, gravel, hard pan or frozen ground. The beam, shoe and clamps, which embrace the solid steel points, are of the best grade of malleable iron. The shoe is case hardened. Weight with one point, 275 lbs.

Each\$34.00

THE "NOXEMAL" ROOTER

Steel

Beam and standard made of machine steel. Shoe made of the best cast steel, into which the solid steel point is inserted without the use of tools and is held without the use of bolts. To detach same, strike rear end with hammer. Each Rooter is supplied with a steel depth regulating gauge. One extra point furnished without charge. Weight 275 lbs.

Each\$38.00



Fig. 5773

WROUGHT STEEL BEAM GRADER PLOW



Fig. 5773

This is a heavy, strongly made plow, especially designed for road building. The beam made of two pieces of steel $\frac{5}{8}$ -inch thick by 3 inches wide. Is made for strength and will stand the strain. It is next to impossible to break either the beam or mouldboard. This plow fills a long-felt want among graders in cities and contractors doing road work. Weight complete, 175 lbs. No extra point furnished with this plow. Wrench only.

With cast mouldboard, chilled point and clevis. Each.....\$24.00

With cast mouldboard and forged steel point complete. Each..... 27.00

THE DOAN DITCHING SCRAPER



Fig. 5791

The Doan Scraper is a great favorite among contractors for cleaning out and back filling ditches, and leveling roads and uneven places.

It is well made of seasoned hard wood. The bit is made of special steel, 48 inches long, $\frac{1}{4}$ inch thick and 7 inches wide, which is 2 inches wider than those usually made. The scrapers are well ironed and bolted, and the hounds are made of $1\frac{3}{4} \times \frac{5}{8}$ inch steel, with $\frac{3}{8}$ inch cable chain.

Width 48 inches, wt. 75 lbs. each \$7.50

WESTERN WHEELED SCRAPERS

No. 1 WESTERN WHEELED SCRAPER

Wheels are made from selected stock, 36 inches high; tires, $2\frac{1}{2} \times \frac{1}{4}$ inch; axle, $1\frac{1}{2}$ inches square; bowl, 3 feet wide, 3 feet long, 12 inches deep; draft hooks, automatic, patented, prevents the scraper from dumping while being filled, and regulates the cut to even depth.

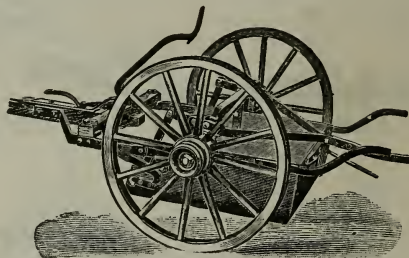


Fig. 5792

No.1 Wheeler. Capacity 9 cubic feet, weight 340 lbs. each \$45.00
Automatic End Gates for above, extra. " 5.00
Whiffletrees and neckyokes, extra.

No. 2 WESTERN WHEELED SCRAPER

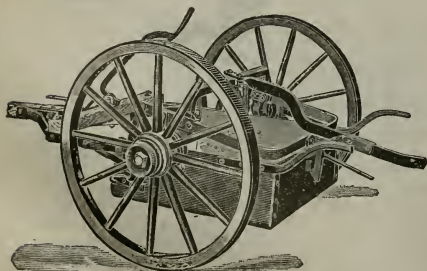


Fig. 5793

Wheels made from selected stock. 40 inches high; tires, $3 \times \frac{3}{8}$ inch; axle, $1\frac{1}{2}$ inches square, arched $3\frac{1}{2}$ inches higher than the old standard Wheelers were; bail is of an entirely new pattern, is bent around on a line with the top edge of the pan and supported by the lever, which is arched (see cut) and extends forward and is firmly attached to the axle, giving abundant clearance for the dirt in filling and dumping; bowl, 3 feet 2 inches wide, 3 feet 1 inch long, $13\frac{1}{2}$ inches deep; draft hooks, patent, automatic, prevents scraper from dumping while being filled, and regulates the cut to even depth.

No. 2 Wheeler. Capacity 12 cubic feet, weight 600 lbs. each \$50.00
Draft Rods for above, extra. " 2.00
Automatic End Gates for above, extra. " 5.00
Whiffletrees and neckyokes, extra.

SCRAPERS

TONGUE SCRAPER, LEVELER AND
DITCHER

This is an excellent Scraper for cutting and cleaning ditches and moving large quantities of earth rapidly when the distance is not too great. The drawbars and bit are made of the best quality of steel. It is well ironed and made of well-seasoned hard wood. The driver can fill and dump it with ease.

No.	Width inches	Weight pounds	Each
1	48	135	\$10.50
2	42	120	10.00

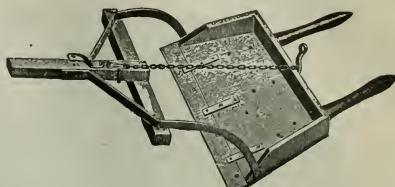


Fig. 2

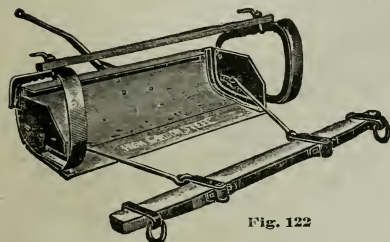


Fig. 122

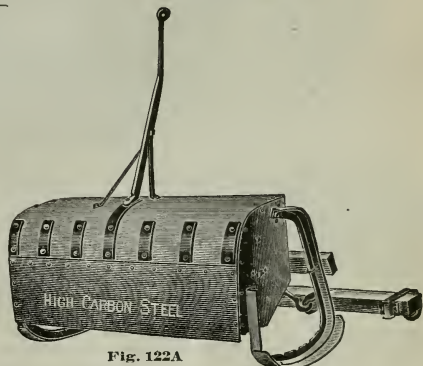


Fig. 122A

BUCK SCRAPERS—FRESNO TYPE

A very popular type Scraper. Is much used in railroad construction work, for irrigation leveling and road building. Will do any kind of work usually done by drag and wheeled scrapers. Capacity ranges from 12 to 18 cubic feet, depending on size.

A distinctive feature in this scraper is an arrangement of bars with adjustable clevises which regulates the load distribution. These permit the distribution in uniform layers ranging from 1 inch to 12 inches, or deposit in bulk.

Built to Wear—Made of carbon steel with wrought iron rods, hardwood drawbar, cross-braces and handle. Top edge of body plate reinforced with strong angle along its entire length.

No. 1.	Capacity 18 cubic feet; cutting edge 5 feet; wt. about 315 lbs.....	Each	\$26.00
No. 2.	Capacity 14 cubic feet; cutting edge 4 feet; wt. about 250 lbs.....	"	24.80
No. 3.	Capacity 12 cubic feet; cutting edge 3½ feet; wt. about 340 lbs.....	"	24.00

SQUARE BACK ALL STEEL DRAG SCRAPERS

This Scraper is cold pressed from a single sheet of high carbon scraper steel. The back is square and the bottom sufficiently rounded to reduce friction. The sides are high, assuring rated capacity. Corner laps and runners are electrically welded. Heavy steel bale and hooks. Malleable iron swivel and sockets.

No. 1 is the largest size and adapted to long hauls. No. 2 is the size in most general use.

No. 3 is the size intended for high banks and ditches.

No.		Capacity Cu. Ft.	Price Each
1	Without Runners	7	\$8.88
2	Without Runners	5	8.20
3	Without Runners	3	7.80
1	With Runners	7	9.20
2	With Runners	5	8.60
3	With Runners	3	8.20

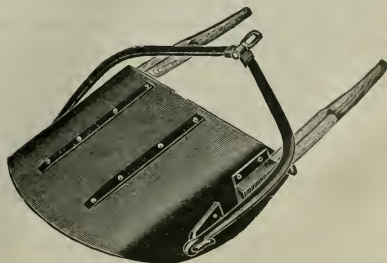


Fig. 3 with Runners

Scrapers **WITH RUNNERS** will always be shipped unless otherwise specified.

BRIGGS-CHICAGO CONCRETE CARTS

WATER-TIGHT TIPOVER



Fig. 578

You can store materials at street intersections while you are grading. Most experienced paving contractors consider this the greatest advantage of the Cart System. It saves all interruptions in receiving and delays in waiting for materials. In many cases they can be piled upon paved intersecting streets. This means easier shoveling. Materials can be purchased, hauled and placed when most convenient, without regard to grading.

The Briggs-Chicago Cart System keeps the mixer in continuous, uninterrupted operation at one "setting" from one to two days at a time. By eliminating the delays of frequent moving, you increase the efficiency of your mixing gang and secure greater yardage from your mixer.

Four or five carts will haul and distribute the mixed concrete economically a distance of 400 to 500 feet in both directions from the mixer. Each cart holds the full mixer batch—twenty cubic feet—the equivalent of four or five surface yards. Discharging full batches saves delays at the mixer. For rapid, continuous, economical distribution of mixed concrete over street surfaces, no other system comes within range of Briggs-Chicago Spreaders. They deliver the mixture on the grade in the uniform thickness desired—with the mortar on top—requiring less additional labor for spreading and finishing than with any other method.

The finished grade is kept free and clear of materials and obstructions at all times. Briggs-Chicago Carts have large, wide-tired wheels which do not cut up the sub-grade. They act as rollers. You can lay concrete with these carts in wet weather when not possible with other methods.

GENERAL FEATURES

Holds the full mixed batch of the ordinary paving mixer—twenty cubic feet. Equipped with 54 inch diameter steel wheels, with 6 inch tires. Weight 1050 pounds with roller-bearing wheels. Easily drawn by one horse. Cart and horse can be turned in a 12 foot space. Clearance required under mixer discharge chute, 39 inches. The Tipover Cart dumps over backwards, and its rear-end discharge is especially adapted for delivering concrete into car tracks. The smooth, clean inner surface of the cart body, the corners of which are rounded to a 3 inch radius, prevents concrete from sticking. It is absolutely water-tight and practically self-cleaning.

DETAILED SPECIFICATIONS

Capacity—Made only in one size designated as a $\frac{3}{4}$ yard cart, holding 20 cubic feet of mixed concrete level full, easily drawn by one horse.

Weight—With plain steel wheels, 1040 lbs.; with steel roller-bearing wheels, 1050 lbs.; with wood wheels, 940 lbs.

Height—To top of body (mixer discharge chute clearance): With steel wheels, 39 inches; with wood wheels, 36 inches.

Length—Over all, 11 feet 3 inches. Cart with horse turns in 12 foot space.

Width—With plain steel wheels, 6 feet 3 inches over all; with steel roller-bearing wheels, 6 feet 6 inches; with wood wheels, 6 feet 5 inches.

Wheels—Steel, 54 inch diameter, 6 inch tires. Furnished either plain or with roller-bearings. Roller-bearing wheels recommended; they reduce

draft 20 per cent; bearings are renewable. Tread, with R-B wheels, 64 $\frac{1}{2}$ inches; with plain wheels, 65 $\frac{1}{2}$ inches. The Tipover Cart is also furnished, if preferred, with wood wheels, 48 inch diameter, 4 inch tires. Tread, 64 inches.

Shafts—For one horse; made of channels, strongly reinforced where attached to cart body. Ends of shafts rounded to protect horses.

Cart Body—Made of No. 12 steel plate, in only three pieces. Corners rounded to a 3 inch radius, giving a smooth, clean inside surface. Outside of body fitted with three wide "hammering bands." Top sides of body fitted with steel "slop shields."

Body turns completely upside down in discharging, tripped by hand lever near center of right cart shaft. Road clearance, 14 $\frac{1}{2}$ inches. Absolutely water-tight and practically self-cleaning.

WEIGHTS AND PRICES

Spreaders

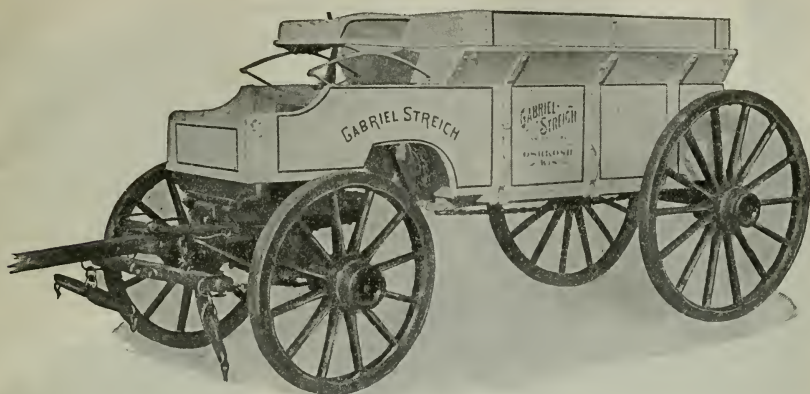
Spreader, with steel roller-bearing wheels. Size wheels, 54 inch diameter, 6 inch tire. Weight, 1055 lbs.	price	\$240.00
Spreader, with plain steel wheels. Size wheels, 54 inch diameter, 6 inch tire. Weight, 1055 lbs.	price	220.00

Tipovers

Tipover, with steel roller-bearing wheels. Size wheels, 54 inch diameter, 6 inch tire. Weight, 1050 lbs.	price	240.00
Tipover, with plain steel wheels. Size wheels, 54 inch diameter, 6 inch tire. Weight, 1040 lbs.	price	220.00
Tipover, with wood wheels. Size wheels, 48 inch diameter, 4 inch tire. Weight, 940 lbs.	price	240.00

FOR COMPLETE LINE OF PAVING EQUIPMENT, SEE INDEX

DUMP WAGONS



The patent under-draft attachment on this wagon does entirely away with whipping of the tongue, draws the load direct from the axle, which gives from one-third to one-half easier draft and saves horse-flesh and wear and tear on wagon and harness.

The dumping operation is so simple and so easily done that a small boy can dump the load and wind up the doors perfectly.

To dump the load lift the dog and push the lever forward.

But one lever is used for closing the doors and dumping the load.

Because of the large drum on which the chain is wound, it is necessary to move the lever forward and back only a few times. Only one chain is used.

It is impossible to dump the load by accident.

The Shaft and Drum are placed across the front end of wagon. This distributes the strain and prevents the right-hand front corner from sagging.

The Doors are hung by heavy loops, instead of rigid hinges. This allows them to be raised about eight inches and prevents them from being torn off when moving forward after dumping. The doors close almost water-tight.

The Steel Axles are reinforced by heavy hickory bed pieces, securely clipped on, which strengthens the axles and prevents springing or breaking. No malleable iron standard space used by us.

The Neck is reinforced by a plate of sheet steel, both inside and outside, running back to the forward side trap.

As nearly all of the metal parts are wrought iron or steel, any blacksmith can make repairs, and there is no annoyance of waiting for malleable parts to come from the factory.

The Wheels are made with oak hubs, oak rims and oak or hickory spokes.

All Tires and Bands set by hydraulic pressure, which insures their being as round and true as a pulley and absolutely tight.

SPECIFICATIONS

The Gabriel Streich Dump Wagon is made in four sizes, with capacities of $1\frac{1}{2}$, 2, $2\frac{1}{2}$ and 3 yards. The first two sizes have 2 inch front and $2\frac{1}{4}$ inch rear axles. The two larger sizes have 2 inch front and $2\frac{1}{2}$ inch rear axles. The tires are made of round edge steel, 3 inches wide and $\frac{5}{8}$, $\frac{3}{4}$ or $\frac{7}{8}$ inches thick on the smaller wagons, and 4 inches wide and $\frac{5}{8}$ and $\frac{3}{4}$ inch thick on the larger sizes.

The front wheels are 3 feet 4 inches high and the rear wheels 4 feet 4 inches high. The weights are 1900, 2200, 2300 and 2450 pounds respectively for the four capacities.

List price, $1\frac{1}{2}$ yards	\$.....
List price, 2 yards	\$.....
List price, $2\frac{1}{2}$ yards	\$.....
List price, 3 yards	\$.....

We will be pleased to quote price on receipt of tire specifications and number of wagons desired.

SMITH MIXERS

DUO-CONE DRUM—TILTING DISCHARGE

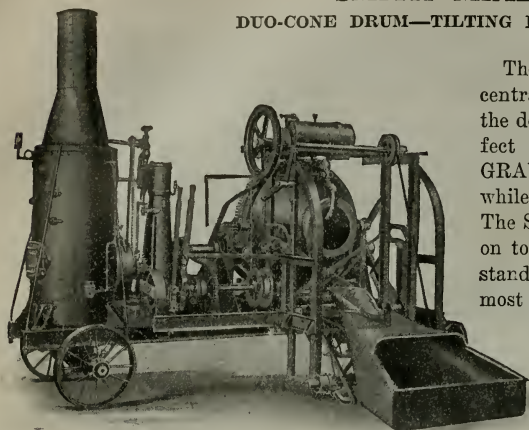


FIG. 1

COMBINES LOADER AND ELEVATOR

Secure the MINIMUM LOADING COST by using a Smith Mixer equipped with a Smith vertical acting, non-pivoted, extensible power loader, Fig 1. Extend your loader frame downward two feet or twenty feet. The Omaha Water Board mounted their Smith Mixers way up in the air and extended their loader frames so as to load from the ground 39 feet below. This adaptability of their Smith Mixers saved them the cost of hoisting engines, towers and chuting systems.



FIG. 2

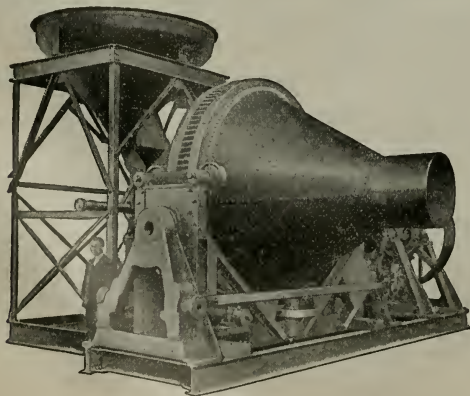


FIG. 3

SMITH MIXERS are built in ten sizes, ranging from the FOUR FOOT Smith Mascot shown in Fig. 2 to the colossal FOUR YARD machine shown in Fig. 3. They are furnished with steam, gasoline or motor drive, and can be equipped with power loader, gated batch hopper or standard feed chute.

Write for Prices. Send for Special Smith Mixer Catalog
We Can Furnish Mixers from \$125.00 to \$5,000.00

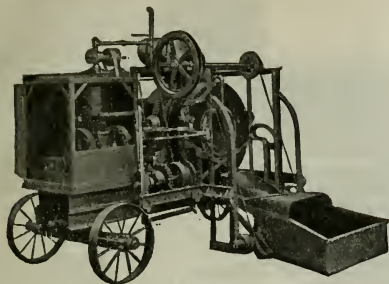


Fig. 4

Smith-Chicago Mixers combine RAPID MIXING and FAST DISCHARGE with absolutely NO SPLASHING.

The deep blades with their long sloping sides produce a constant reciprocating motion—the end-to-center mixing action that makes perfectly mixed concrete.

The concaved drip ring allows the long, steep chute to swing way into the drum, thus insuring a fast clean discharge.

Smith-Chicago mixers are built in ten sizes. The smallest the Smith Mixerette shown in Fig. 7 holds three cubic feet of wet, mixed concrete. The largest holds 81 cubic feet. They are furnished with steam or gasoline engines or motors. The variety of loading methods adapts these machines for any class of work.

The power loader shown in Figs. 4 and 5 is the famous Smith non-pivoted, vertical acting loader with extensible frame. Both the standard feed chute and the gated batch hopper have a low feed level and at the same time the long steep hopper sides insure a rapid flow into the drum.

SMITH-CHICAGO MIXERS

NON-TILTING TYPE

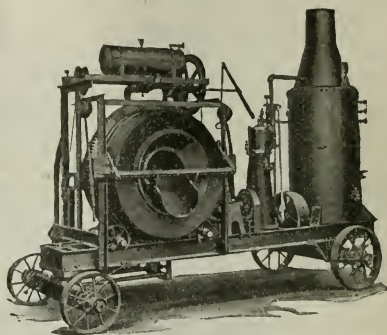


Fig. 5

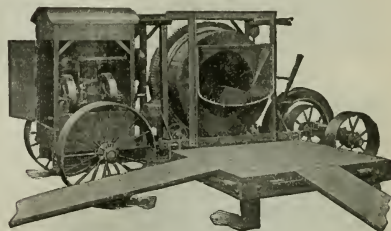


Fig. 6

PLATFORM ONLY 16 INCHES HIGH

Look at Fig. 6. Notice how the truck frame is **UNDERSLUNG** so as to obtain the low 16 inch loading level and how the steel goose neck enables you to turn the machine in its own length. These dandy Smith-Chicago Low-Chargers are built in four sizes—the 3 foot Mixerette shown in Fig. 7 and the 4, 6 and 9 foot Smith-Chicagos as shown in Fig. 6.

Send for Special S-C Mixer Catalog

Write for Prices

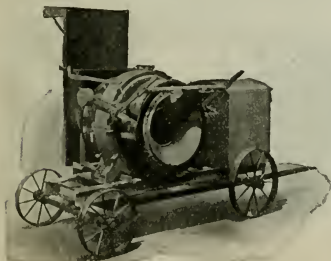


Fig. 7

CARPENTER MORTAR MIXER

The mixing paddles in this Mortar Mixer are made on the principle of a perforated mortar hoe and so arranged in the mixing drum that while in the process of mixing the mortar is forced to the open end of the drum where it is controlled by a locking end gate. The water connection consists of a perforated pipe arranged for hose connection.

This outfit is substantially built with channel iron frame mounted on steel wheels. The mixing paddles are strung on a heavy steel mixing shaft in such a way that should one break, it can be replaced by removing two bolts and inserting a new paddle in its place. A friction clutch operated from the discharge end of mixing trough controls the paddle movement and the engine installed in this mixer is of ample power to operate same. This mixer will supply and keep busy from 30 to 40 brick layers.

SPECIFICATIONS

Truck—5 inch channel iron.
Wheels—front 16x4 in., rear 36x4 in.
Axles—2½ in. diameter.
Paddle Shaft—2 in. square.
Speed of Paddle—50 R. P. M.

Size of Water Connection—½ in. pipe.
Overall Length of Outfit—10 ft.
Overall Width of Outfit—5 ft., 6 in.

Net Weight with Engine—2,650 lbs.
Engine installed in Outfit—5 H. P., hopper cooled.
Wood or Steel House.

COMBINATIONS FURNISHED

With five horsepower, four cycle water hopper cooled gasoline engine installed, the complete equipment mounted on a strong steel truck, wood house, ready to operate when delivered.....	\$600.00
With five horsepower, four cycle water hopper cooled gasoline engine installed, the complete equipment mounted on a strong steel truck, steel house, ready to operate when delivered.....	640.00
Complete with alternating current, single phase, 60 cycle motor, speed 1165 R. P. M. interchangeable, 110 or 220 volt, knife switch, wired and installed complete ready to connect on job.....	813.33
Complete with alternating current, two or three phase, 60 cycle motor, speed 1140 R. P. M. interchangeable, 220 or 440 volt, knife switch, wired and installed complete ready to connect on job.....	600.00
Complete with direct current motor, speed 1200 R. P. M., 110 or 220 volt, with starting box, wired and installed ready to connect on job.....	760.00
Mortar Mixer complete mounted on a strong steel truck, but without power or housing.....	346.66
Low-Tension friction drive magneto in connection with dry cells and coil.....	40.00
High-Tension gear-driven "Dixie" magneto (no dry cells or coil).....	37.33

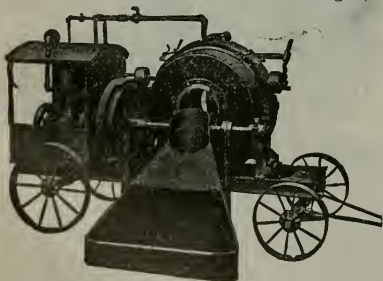


Fig. 8

SMITH BUILDERS' SPECIAL

A dandy outfit for building contractor or silo builder. Consists of Mixerette drum, extra horse power gas engine and single acting friction hoist, all mounted on a substantial standard gauge truck. Engine can be operated independently, with hoist or mixer drum or with both. Equipped with batch hopper, low charging platform or gear lifted loader.

Send for Special Mixerette Folder

SMITH MIXERETTE

The Smith Mixerette is the ideal mixer for the smaller concrete jobs. It is light and portable, and will turn out a big volume of concrete. Holds 3 cubic feet of wet mixed concrete per batch or 5 cubic yards per hour. Equipped with powerful gas engine enclosed in steel house and a choice of gated batch hopper, low charging platform, only 16 inches high (Fig. 7) or gear lifted loader (Fig. 8). Has the famous Smith Dust Proof casing which protects gear ring and driving pinion.

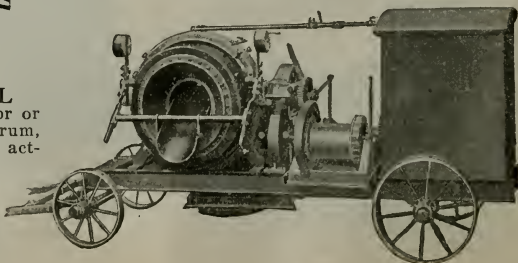
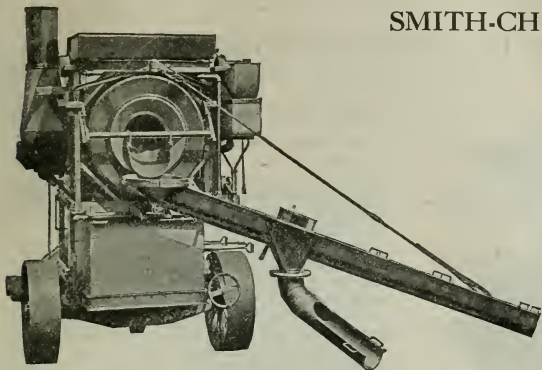


Fig. 9

SMITH-CHICAGO HIGH-DRUM
PAVER

LONG, STEEP, 20° ANGLE SWIVEL CHUTE

Committee VIII of the National Conference on Concrete Road Building endorsed this vital feature on S-C High-Drum Pavers as follows: "We believe, as a result of the tests mentioned, that the *least* angle for the distributing chute should be approximately 20 degrees. . . . It is better to increase the pitch of the chute than to increase the amount of water."

ACCURATE WATER WEIGHING DEVICE

The same Committee reported that: "A most important item is the amount of water to use. . . . The maximum amount of water should be 6 pounds per cubic foot of loose material. . . . The new high-drum type Smith-Chicago Pavers are all equipped with this device which measures accurately every batch of water that goes into the mixer drum. The Committee proved the above statement."

WIDE, EASILY LOADED THREE-MAN SKIP

The big, wide, easily loaded skip discharges directly into the drum—there is no intermediate hopper to retard the flow—and it goes up in only nine seconds.

ABSOLUTE ALIGNMENT

All the hoisting and propelling shafts, gears, brackets and boxes are bunched on a ONE-PIECE steel casting supported by a heavy STEEL bolster over the big rear axle. Not a single box is fastened to the truck sills—Perfect alignment is assured.

Smith-Chicago High-Drum Pavers are Built in
Four Sizes, Holding 4, 7, 10 and 16 Cubic
Feet of Wet Mixed Concrete, Per Batch

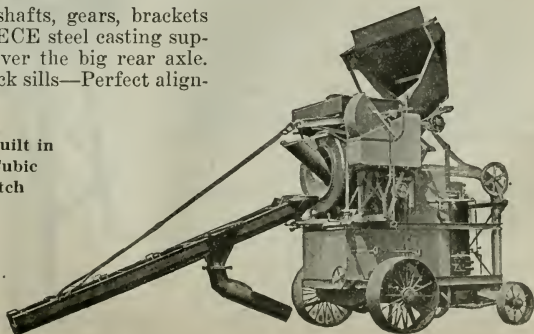
Send for Special S-C High-Drum
Paver Folder and Full Report
of Committee VIII

Write for Prices

THE TEN VITAL FEATURES
IN THE

SMITH-CHICAGO HIGH DRUM PAVER

- 1-Long distributing chute with 20° slope
- 2-Positive water weighing device - automatically operated
- 3-Wide, easily loaded three man skip
- 4-Water storage tank- 7 batch capacity
- 5-Traction and main driving gears enclosed in steel house, every gear, box, key etc, perfectly accessible. All parts located on single, heavy steel casting over rear axle independent of frame
- 6-Differential gears on all sizes
- 7-Power plant located on center line of mixer-truck. Engine enclosed in steel house
- 8-Boiler door, water gauges, injector, lubricator, throttle valve and all operating levers handled from ground level on one side of machine
- 9-Discharge spout withdrawn from drum automatically
- 10-Mixer drum can be disengaged through clutch when mixer is being moved



CEMENT AND PLASTER SACK BALER



NEW ECONOMY SACK BALER

You want credit for every good cement or plaster sack you return to the manufacturer. In order to expect this credit it is necessary to comply with the regulations of the railroads in bundling, and to be sure that you have an accurate count.

The New Economy Sack Baler in your business will pay for itself in increased credits allowed in a short time. It will enable you to count your sacks accurately and to bundle them perfectly. It makes it possible for you to count and bundle your sacks quickly and receive credit for them, instead of constantly permitting a large quantity to accumulate. Twenty bundles of 50 sacks each, represent an investment of \$100 on which there is no return. Money represented by these sacks in your warehouse can be used in productive ways.

Bales empty cement or plaster sacks. Makes all bundles tight, whether sacks are clean or dirty. One man can bale more sacks with this machine than two men can by hand, and will do it better.

There is nothing on this machine to get out of order.

The Baler is made with wheels for contractors' use.

The Baler has an automatic counting device which is mechanically correct. It makes it possible to accurately count all sacks up to fifty. When fifty sacks have been placed on the table a bell rings. The dial always indicates the number of sacks on the table.

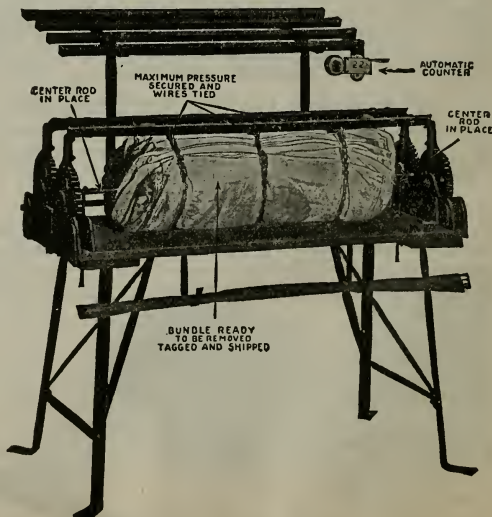
Wire or rope ties may be used with the New Economy Baler. Railroad Companies specify if rope be used that it must be $\frac{3}{8}$ inch in diameter. Wire is considerably cheaper and may be used to a little better advantage than rope, as it will work faster in bundling. Three distinct ties of wire meet with approval of both cement and railroad companies.

We have in stock, ready to ship, a soft wire straightened and cut to proper length, put up in bundles sufficient to bale 12,500 sacks.

PRICES

Baler, as shown.....	\$30.00
Baler with two 16 inch wheels and handles	40.00
Annealed wire, cut to length, enough to tie 12,500 sacks, per bundle	3.75

FOR VARIOUS KINDS OF CEMENT AND PLASTER TOOLS, SEE INDEX



CONCRETE SPOUTING EQUIPMENT

CONCRETE HOIST BUCKET

No. 345 Concrete Hoist Bucket is of a very rigid construction, and will stand hard usage. The channel guides running the entire length of the frame and flared at ends, also roller caster in front instead of flat bar, reduce friction to a minimum.

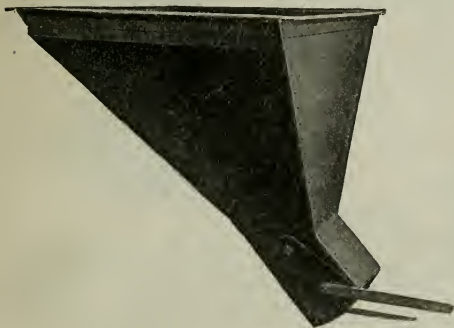


Fig. 346

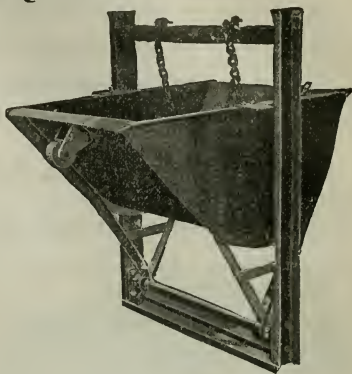


Fig. 345
CONCRETE DISTRIBUTING
HOPPER

No. 346 Distributing Hopper is used in connection with our Concrete Hoist Bucket and is readily attached to any wooden tower. It is built to withstand the strain from the discharge of the concrete mass from the bucket. Has a controllable gate with lever, which can be set at the angle within range of adjustment best suited to the operator.

DIMENSIONS

Capacity cu. ft.	Overall		Width Between Guides ft. in.	Cauge Material Used	
	Length ft. in.	Height ft. in.		Sides No.	Bottom No.
14	4 6	5 4	3 8	12	12
21	5 6	5 8	3 8	12	10
27	5 6	6 0	4 6	10	10
30	5 6	6 0	4 6	10	10

HOIST BUCKET

List	Capacity cu. ft.	H. P. 60 ft. per Minute	Size Cable Inch	Weight lbs.	Price	Price With Sheave
345A	14	9	½	450	\$70.00	\$78.50
345B	21	12	½	575	78.50	87.00
345C	27	18	¾	725	94.25	102.75
345D	30	24	¾	750	98.50	107.00

DISTRIBUTING HOPPER

List	Capacity Water Measure cu. ft.	Length ft. in.	Width ft. in.	Depth ft. in.	Size Gate Inches	Price
346A	20	4 0	4 0	4 6	12x12	\$60.75
346B	27	4 4	4 8	4 10	12x12	78.50
346C	30	4 4	4 8	5 1	12x12	82.00
346D	41	4 9	5 0	5 2	12x12	90.75
346E	54	4 9	5 0	5 10	12x12	107.00

For Complete List of Spouting, Wire Rope, Blocks, and Equipment of All Kinds, see Index

FLEXIBLE SPOUTING, DUMP AND SCOOP CARS

FLEXIBLE SPOUTING

Our Flexible Spouting is equipped with forged hooks and links, and any number of sections may be joined together. The top section is arranged with bale for connecting to discharge section of concrete chute.

Used extensively by contractors for placing concrete just where it is wanted, doing away with the old and expensive method of wheeling it by hand.

No. 536. Hopper Section, 24 inches square at top, 14 gauge steeleach \$13.70

No. 537. Tubular Section, 10 inches diameter, 3 feet long, 14 gauge steel.....each 6.00

We can furnish any kind of Special Chuting to order. Send us your specifications.

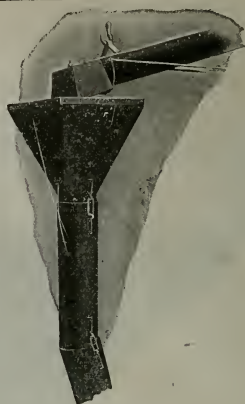


Fig. 536-537

CONCRETE CARS

Particularly adapted for chuting concrete into hoppers, and form work, in the construction of bridges, dams, and all places where it is impossible to tip the car. Special attention is called to the levers on each end, and the ease of operation in opening the gate.

DIMENSIONS

Capacity yards	Size Over All			Material	Size Wheels inches
	Length inches	Width inches	Height inches		
$\frac{1}{2}$	52	46	45	No. 12 steel	12
$\frac{3}{4}$	60	49	54	No. 10 steel	12
1	72	55	54	No. 10 steel	12
$1\frac{1}{2}$	85	60	56	$\frac{3}{8}$ in. steel	14

PRICE LIST

List	Capacity yards	Gauge inches	Weight lbs.	Price
455A	$\frac{1}{2}$	24	800	\$109.00
455B	$\frac{3}{4}$	24	950	122.75
455C	1	24	1,200	136.00
455E	$1\frac{1}{2}$	24	1,600	174.50

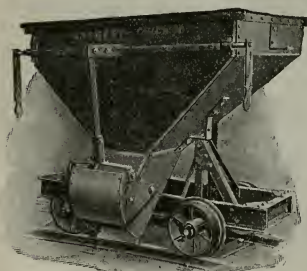


Fig. 455

SCOOP CAR

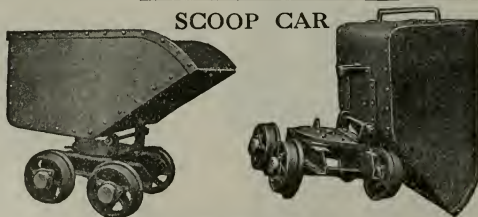


Fig. 420

No. 420 Scoop Car is a favorite with contractors for handling concrete, as it can be operated by one man.

Can be built with straight end dump or with turntable, which allows car to be dumped from any position. Has a channel frame and is furnished with self-oiling or roller-bearing wheels or with wheels pressed on axles revolving in roller-bearing boxes.

List	Capacity cu. ft.	Size Plate No.	Track Gauge inches	Weight lbs.	Price
420A	12	12	20 to 24	500	\$70.00
420B	18	10	24 to 30	625	80.00
420C	21	10	24 to 30	775	85.00
420D	27	8	24 to 36	850	105.00

FOR FULL LINE OF CONTRACTORS' EQUIPMENT, SEE INDEX.

STONE ELEVATORS AND SCREENS — DUMP CARS

No. 610 Stone Elevator is used for stone or gravel, is built on a wooden frame and in any length up to 100 feet. Where the length is 30 feet or over, the elevator is supplied with a geared head unless otherwise specified. Take-ups are provided at foot of elevator to take care of slack in belt. Buckets are of steel and all parts of approved design.

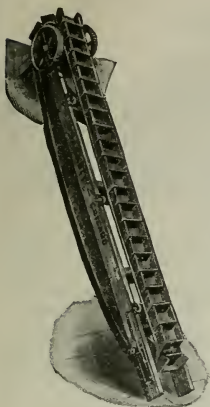


Fig. 610

STONE SCREEN

No. 350 Stone Screen is made with any size perforated plate and is constructed so screen plates may be renewed. This style screen is used extensively by stone crushers, quarries and sand and gravel companies.

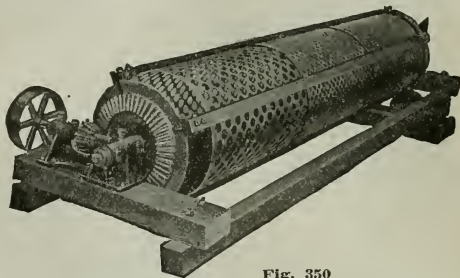


Fig. 350

List	Diameter inches	Length feet	Weight lbs.	Price	Extra per Foot Length
350A	32	8	2,550	\$ 460.00	\$20.00
350E	40	10	3,950	720.00	35.00
350K	48	12	6,500	1,050.00	45.00

END DUMP QUARRY CARS

The Standard straight side, swinging gate, end dump, quarry car is the most common type of quarry car and is giving satisfaction in hundreds of quarries. The body is of heavy steel plate reinforced with angles and bands. Under-frame is of oak with armored ends to protect cars in bumping. Wheels of chilled cast iron, either self oiling, roller bearing, or tight on axle with cast babitted bearing boxes. Made in capacities from 1 to 3 yards. Built for 36 inch gauge unless otherwise specified.



Fig. 430

No.	Capacity cu. yd.	Diameter of Wheels inches	Weight lbs.	List Price
430A	1	12	1,050	\$120.00
430B	1 1/2	12	1,400	137.00
430C	2	14	1,780	165.00
430D	2 1/2	14	2,350	230.00

LIFTING GATE END DUMP QUARRY CARS

For those who want the best all around quarry car we recommend our bent side car with lifting gate. The car is low and therefore easy to load, and the lifting gate can never open and discharge the load accidentally, as is the case with the swinging gate type. We can furnish this car in capacities ranging from 1 to 3 yards.

No.	Capacity cu. yd.	Gauge Track inches	Diameter of Wheels inches	Weight lbs.	List Price
431A	1	36	10	1,000	\$125.00
431B	1 1/2	36	12	1,450	140.00
431C	2	36	14	1,750	160.00
431D	2 1/2	36	14	2,154	200.00
431E	3	56 1/2	16	3,100	260.00

For fitting car with cross and full length oak sills add 20%

FOR COMPLETE LINE OF QUARRY EQUIPMENT, SEE INDEX



Fig. 431

CONCRETE SPOUTING EQUIPMENT

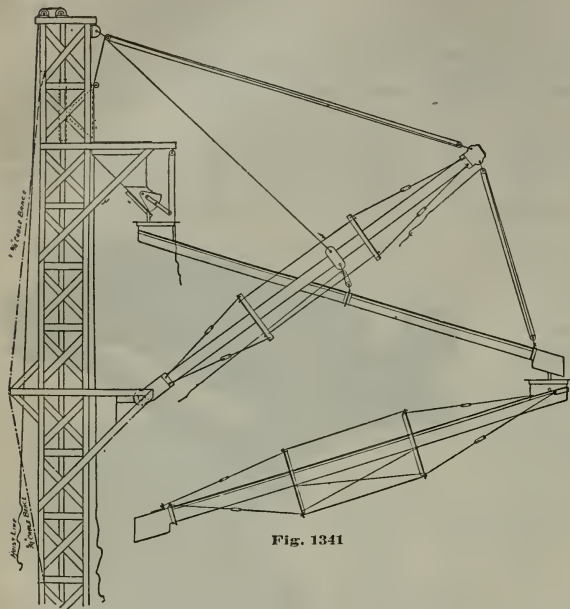


Fig. 1341

Hoist Towers are usually built of wood and the size of the timbers to be used will depend upon the size of the equipment to be used and the height to which the tower is to be built. We will be glad to furnish this information upon request.

Four-by-four inch Guides should be used to suit the Channel Guides on the Hoist Ducket, and the Top Sheaves should be put at least ten feet above the Hopper Bracket.

Tower should be securely guyed, particularly at the top, and also at the Distributing Hopper. If concrete chutes are to be used, a platform should be built around the Hopper.

As the Open Boom Spouting Plant is supported entirely by the Tower it will place the concrete at any point within its radius, which may be 30 to 100 feet without obstructing the working floor. The Boom being of open construction allows the first section of spouting to pass through it, the head of the second length being suspended from the end.

PRICES FURNISHED ON RECEIPT OF SPECIFICATIONS



Fig. 868

TOWER SHEAVES

Two 12 or 14 inch Sheaves are usually used at the top of the Tower, and a single Sheave with housing at the bottom to lead cable to the Hoisting Drum.

TOP SHEAVES

With 1 1/2 inch shaft and babbled boxes

List No.	Diameter inches	Size Cable inch	Price per Set
868A	12	3/4 to 5/8	\$13.75
868B	14	5/8 to 3/4	15.00

BOTTOM SHEAVES

List No.	Diameter inches	Size Cable inch	Plain Bushed	Bronze Bushed
869A	12	3/4 to 5/8	\$8.50	\$11.10
869B	14	5/8 to 3/4	10.25	12.80

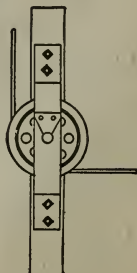
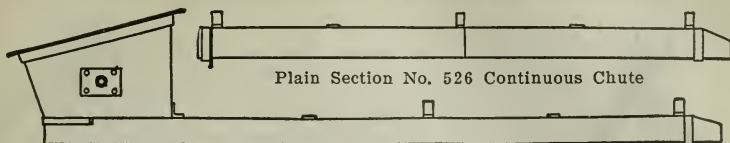


Fig. 869

FOR COMPLETE LINE OF BLOCKS, WIRE ROPE, AND FITTINGS OF ALL KINDS, SEE INDEX

CONCRETE SPOUTING

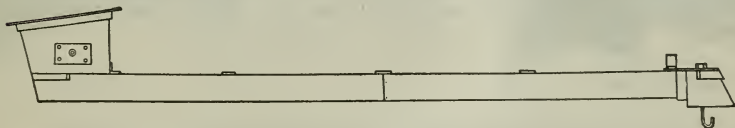


Plain Section No. 526 Continuous Chute

Section No. 526B Chute with Large Remixing Hopper and Connecting Bail



Section No. 526C Chute with Splash Hood and Swivel Hook

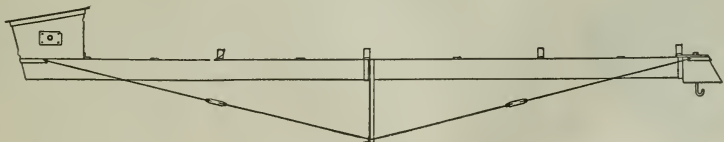


Section No. 526D Chute with Remixing Hopper and Splash Hood

PRICE LIST

No. 526 Concrete Chute (complete) 14 gauge steel	per foot	\$1.35
Section No. 526B. Large Remixing Hopper and connecting bail built to section of chute for use at head of main line for attaching to distributing hopper	Add	5.75
Section No. 526D. Small Remixing Hopper and connecting bail to section of chute for use at head of swivel connection or swivel head spout	Add	4.30
Section No. 526C. Splash Hood with swivel drop hook built to section of chute for use on bottom section of main line or end of swivel head spout	Add	4.30

30 FOOT SECTION



No. 524A. 30 feet long, No. 14 steel trussed bottom only. Complete\$72.75

45 FOOT SECTION



No. 524B. 45 feet long, No. 14 steel trussed bottom only. Complete\$113.90

56 FOOT SECTION



No. 524C. 56 feet long, No. 14 steel trussed bottom and top. Complete\$149.00

For Blocks, Wire Rope and Fittings of all kinds, see index.

KIESLER PATENT CLAM SHELL BUCKET

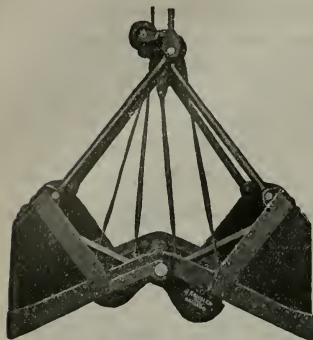


Fig. 236A. Open

The Kiesler Clam Shell Bucket is constructed with a shell or bowl so shaped that it will dig into the material with the least resistancy. They are operated by a powerful Compound Multi-System of Leverage (patented), closing the bucket more rigidly and quicker than in any other style of construction and forcing the bucket into the material instead of having a tendency to lift out.

For their respective sizes they will handle more material than any other Clam Shell Bucket.

This Bucket will handle Crushed Stone, Gravel, Slag, Packed Sand, Coal, Steel Turnings and Borings, and in fact can be used for all general purposes.

Teeth Extra Per Set	Shell Capacity Cu. Yds.	Approximate Wt. Lbs.	Closed		Width Ft. In.	Open		List Price
			Length Ft. In.	Height Ft. In.		Length Ft. In.	Height Ft. In.	
60.00	½	2050	4 8	6 2	3 0	5 11	7 5	\$1090.00
60.00	¾	2150	4 10	6 3	3 0	6 2	7 6	1170.00
60.00	¾ Light	2350	5 1	6 4	3 2	6 5	7 7	1250.00
80.00	¾ Reg.	2800	5 5	6 9	3 6	6 11	7 8	1320.00
80.00	1	2900	5 6	6 11	3 6	7 4	7 11	1440.00
80.00	1 ¼	3200	5 9	7 0	3 6	7 7	8 3	1550.00
100.00	1 ½	4100	6 5	7 2	4 0	7 10	8 9	1710.00
100.00	2	4400	6 7	7 5	4 4	8 10	9 1	1920.00

They are built entirely of Steel and Crucible Steel Castings. The Sheaves are turned and bushed, and are fitted with Steel Bolts or Pins, which are bored and through which the Grease is forced into the center of the bearing, thoroughly lubricating where most needed. **ALL Bolts and Bushings are Case Hardened** and will give unexcelled service and will last for years. The Lever Sheaves are completely protected, so that it is impossible for the cable to jump off or chafe. The Shells are constructed with Steel Cutting Edges which cover the bottom and extend up on to the side. These Cutting Edges can be replaced when worn.

All parts are numbered, a reference to which is all that is necessary when ordering any parts.

A blue print is furnished with each bucket showing operation, and reaving of lines.

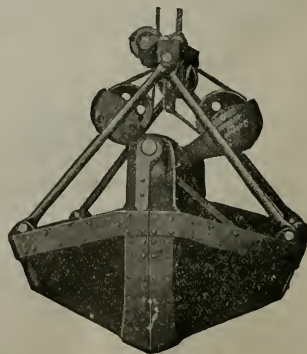


Fig. 236A. Closed

FOR ENGINES AND DERRICKS, SEE INDEX

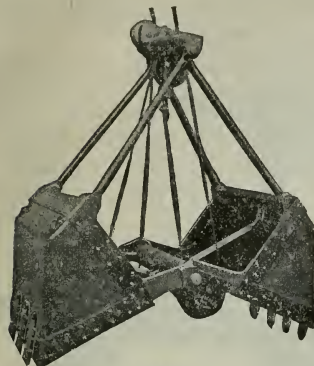


Fig. 237A

KIESLER PATENT CLAM SHELL BUCKET

EQUIPPED WITH STEEL TEETH

The Clam Shell Bucket when fitted with Steel Teeth is adapted for general excavating purposes and digging hard materials. These Teeth will "bite" into the material and assist the bucket in starting to dig into the material. The Teeth are bolted on and can be readily removed when desiring to use the bucket as a regular Clam Shell Bucket.

All Kiesler Buckets are drilled for Teeth, which can be put on at any time; all that is necessary is to remove several rivets.

KIESLER PATENT ORANGE PEEL BUCKET

The Kiesler Orange Peel Bucket is built for digging Clay and other Hard Materials, as well as for dredging and excavating purposes.

They are operated by the same powerful Compound MULTI-SYSTEM OF LEVERAGE as employed in the Clam Shell Bucket.

It is a substantially built bucket and will stand up under the most severe usage.

They are built entirely of Steel and Crucible Steel Castings. The Blades are made of flange steel and all connection Bars or Arms are forged from a solid bar of steel, and the Main Shaft is cold rolled steel.

The Sheaves are turned and bushed, and are fitted with Steel Bolts or Pins, which are bored and through which the Grease is forced into the center of the bearing, thoroughly lubricating where most needed.

All Bolts and Bushings are Case Hardened and will give unexcelled service and will last for years.

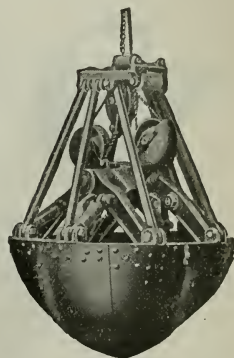


Fig. 237B, Closed

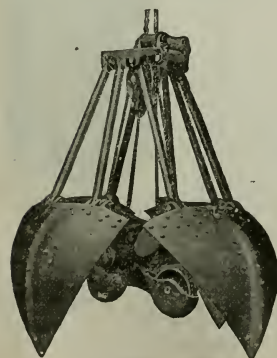


Fig. 237B, Open

Shell Capacity Cu. Yds.	Approximate Wt. Lbs.	Closed		Open		List Price
		Diam.	Height	Diam.	Height	
		Ft. In.	Ft. In.	Ft. In.	Ft. In.	
$\frac{3}{4}$	3500	4 7	6 8	6 2	7 2	\$1850.00
1	3900	4 9	7 0	7 7	7 5	2030.00
$1\frac{1}{4}$	4300	4 10	7 4	7 8	7 8	2250.00
$1\frac{1}{2}$	4800	5 0	7 8	7 10	7 10	2500.00

FOR WIRE ROPE BLOCKS, ETC., SEE INDEX

No. 451 Two-Way Dump Car has wheels pressed on axles and roller bearing boxes. This car can be equipped with brakes, also with spring draw head when desired.

PRICE LIST

List No.	Capacity cu. ft.	Track Gauge inches	Weight lbs.	Price
451A	14	24	750	\$85.00
451B	18	24	850	95.00
451C	21	24	900	100.00
451D	27	24	975	110.00
451E	36	24	1150	120.00
451F	41	24	1350	130.00
451G	54	24	1750	185.00

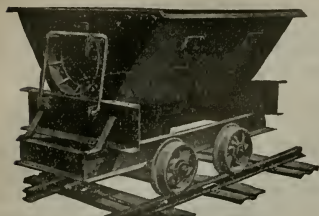


Fig. 451

FLAT CAR

List No.	Size ft. wide ft. long		Weight lbs.	Price
440F	4	6	550	\$72.00
440G	5	8	900	82.00



Fig. 440

CONTRACTORS' TIP BUCKET

Self-Dumping and Self-Righting

PRICE LIST

List No.	Capacity cu. ft.	Material	Price
320A	8	No. 12 steel	\$44.00
320D	14	No. 12 steel	60.00
320F	21	$\frac{3}{8}$ in. steel	90.00
320G	27	$\frac{3}{8}$ in. steel	105.00
320H	36	$\frac{3}{8}$ in. steel	125.00
320I	41	$\frac{3}{4}$ in. steel	140.00



Fig. 320

No. 320 Contractors' Tip Bucket automatically dumps when catch is released, and upon discharging rights and locks itself. Bail, trip, stops, etc., are all heavy forgings to withstand severe usage.

No. 326 TURN OVER BUCKET

No. 326 Turn Over Bucket is adapted to work where large quantities of concrete are to be placed. It also used for handling clay and stone. Has forged steel bail turntrunnions and stops.

DIMENSIONS

Capacity cu. ft.	Size Bucket		Size Over All	
	Diameter inches	Height inches	Width inches	Height inches
6	22	28	27	40
8	25	30	31	42
14	30	35	36	48
18	32	40	40	58
21	34	40	42	58
27	36	46	44	68
42	45	52	55	76

PRICE LIST

List	Capacity cu. ft.	Material		Price
		Sides	Bottom	
No. 326A	6	No. 12	No. 10	\$32.00
No. 326B	8	No. 12	No. 10	36.00
No. 326E	14	No. 10	$\frac{3}{16}$ in.	52.00
No. 326G	18	No. 8	$\frac{3}{16}$ in.	61.50
No. 326I	21	$\frac{3}{16}$ in.	$\frac{3}{16}$ in.	69.50
No. 326K	27	$\frac{3}{16}$ in.	$\frac{1}{4}$ in.	75.00
No. 326M	42	$\frac{1}{4}$ in.	$\frac{1}{4}$ in.	112.50



Fig. 330



Fig. 326

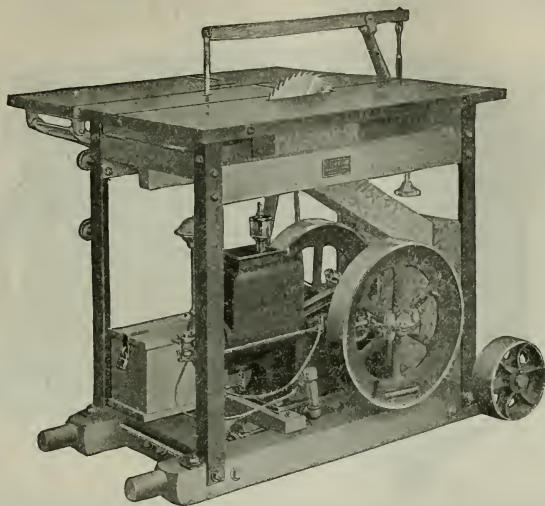
BOTTOM DUMP BUCKETS

No. 330 Bottom Dump Bucket is used where space between forms is small and tilting bucket would be likely to spill. Same dimensions and size material as Turn Over Bucket.

For List Price of Bottom Dump Bucket, add 10% to above prices

FOR COMPLETE LINE OF PUSH, FLAT AND HAND CARS, SEE INDEX.

CARPENTER No. 3 PORTABLE SAW RIG



SPECIFICATIONS OF THE CARPENTER No. 3 PORTABLE SAW RIG

Upper Frame—2x4 inch clear maple.

Skids—4x4 inch Washington fir.

Uprights—2x2x $\frac{1}{4}$ inch angle iron.

Table—40x42x $\frac{1}{8}$ inches clear maple built up of narrow strips glued and bolted together with two bolts extending through entire width. Table is hinged at rear end and raised and lowered by raising screw.

Belt—2 $\frac{1}{2}$ inches wide—tightened by belt tightener.

Arbor Bearings—1 $\frac{1}{8}$ x2 $\frac{3}{4}$ inches.

Diameter of Arbor for Saw—1 inch.

When installing an Electric Motor in any of our outfits, special attention must be given to the voltage on direct current service and the phase and voltage when mounting either single phase, two phase or three phase motor, with the correct cycle, speed, etc.

Speed of Arbor—2800 R. P. M.

Largest Diameter of Saw—12 inches.

Capacity of Saw—ripping 1 inch, cross-cutting 3 inches.

Capacity of Jig Saw—5 inch lumber.

Gasoline Consumption—about 1 $\frac{1}{2}$ gallons per day.

Overall Length of Outfit—56 inches.

Overall Width of Outfit—42 inches.

Height of Table from Floor—37 inches.

Net Weight of Outfit, with engine and all attachments—700 pounds.

THE CARPENTER No. 3 PORTABLE SAW RIG ATTACHMENTS

1—10 inch Disston Rip Saw (filed and set).....	\$5.33
1—10 inch Disston Cross Cut Saw (filed and set).....	5.33
1—8 inch diameter, $\frac{1}{2}$ inch Dado Head.....	6.00
1—4 inch Jointer (4 knives) with adjustable iron block and gauge.....	29.33
1—Jig Saw with three blades, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ each.....	18.67
1—Boring Machine complete with sliding table, $\frac{1}{8}$, $\frac{1}{2}$ and $\frac{3}{4}$ inch bits.....	13.33
1—inch Emery Wheel.....	4.00
1—10 inch Sander and Wax.....	5.33
1—Canvas Cover.....	10.67
1—Saw Table, with adjustable rip gauge, cross cut gauge, saw mandrel, trucks, belt tightener and saw guard.....	126.66
1—Carpenter 3 H. P. Water Hopper, Cooled, four cycle gasoline engine complete with battery box, two spark plugs, wrenches, oil can.....	133.33

Carpenter No. 3 Saw Rig complete with all attachments \$360.00

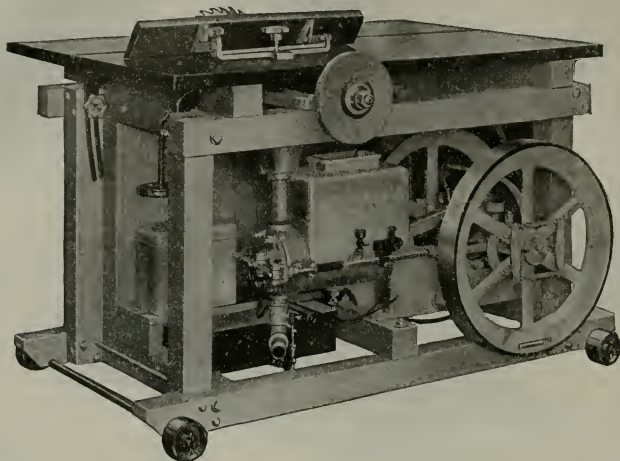
VARIOUS COMBINATIONS FURNISHED

Low-Tension friction drive magneto in connection with dry cells and coil.....	\$40.00
High-Tension gear-driven "Dixie" magneto (no dry cells or coil).....	37.33
No. 3 Saw Rig with 1—10 inch rip, 1—10 inch cross cut saw, gauges, 3 H. P. engine (no attachments).....	270.00
Outfit complete with all attachments (without power).....	226.66
Outfit complete with all attachments with tight and loose pulley and belt (without power).....	253.33
Outfit complete with all attachments with alternating current, single phase, 60 cycle motor, speed 1750 R. P. M. interchangeable, 110 or 220 volt, knife switch, wired and installed complete.....	540.00
Outfit complete with all attachments, with alternating current two or three phase, 60 cycle motor, speed 1720 R. P. M. interchangeable 220 or 440 volt, knife switch, wired and installed.....	420.00
Outfit complete with all attachments, with direct current motor, speed 1720 R. P. M., 110 or 220 volt, with starting box, wired and installed.....	446.66

Special Adjustable Dado Heads, to cut any size from $\frac{1}{8}$ to 2 inches wide, can be mounted on this No. 3 Outfit.

Moulding Knives in any shape or form can be furnished, as well as a special cutter head to carry same.

THE CARPENTER No. 1-A PORTABLE SAW RIG



For sawing concrete form lumber, the Carpenter No. 1-A outfit is what you want. If you have a reinforced concrete job you can save much time and money on your forms by doing your own mill-work. One man with this machine can save you enough money to pay for it on one contract. This outfit was especially designed for this class of work, and will rip 4-inch lumber.

The frame, table, skids, etc., are constructed entirely of the very best maple, well seasoned, so as to hold their shape permanently. The standards, or legs, are made of 3½ inch square, clear maple, strongly bolted together. A partition is put in on the saw side, which protects the engine and all its working parts from saw dust. This partition also adds greatly to the stiffness of the frame.

The table is constructed of 1½ inch clear maple, 60 inches long by 42 inches wide, perfectly fitted and bolted together with three long bolts extending through the entire width of the table. The table can be raised and lowered and is held in position by two raising hooks and raising screw wheel. The table is made large, so that wide forms can easily be handled, either on the rip or cross-cut. The large rip and cross-cut guides slide in iron grooves.

The 10 inch emery wheel is a handy tool on the job to sharpen picks and to run the rough edges off of shovels, etc. You will make no mistake in purchasing this Rig if you want large capacity in ripping and cross-cutting lumber.

SPECIFICATIONS OF THE CARPENTER No. 1-A PORTABLE SAW RIG

Frame—3½x3½ inch clear maple.
 Skids—3½x3½ inch clear maple.
 Table—42x60x1½ inch clear maple, built of narrow strips glued and bolted together with three bolts extending through entire width. Table is hinged at rear end and raised and lowered by a raising screw and locked in position by malleable iron hooks.
 Belt—3½ inches wide, tightened by belt tightener.
 Arbor Bearings—1 3-16x3½ inches.
 Diameter of Arbor for Saw—1 inch.

Speed of Arbor—2600 R. P. M.
 Largest Diameter Saw—22 inches.
 Capacity of Saw—ripping 4 inches, cross cutting 4 inches.
 Gasoline Consumption—about 3 gallons per day.
 Overall Length of Outfit—5 feet, 5 inches.
 Overall Width of Outfit—46 inches.
 Height of Table from Floor—39 inches.
 Net Weight of Outfit with Engine—1250 pounds.
 Engine installed in Outfit 5 H. P., Carpenter hopper cooled.

THE CARPENTER No. 1-A PORTABLE SAW RIG ATTACHMENTS

1—14 inch Disston Rip Saws (filed and set) \$4.00 each	\$10.67
1—16 inch Disston Rip Saw (filed and set)	13.33
1—16 inch Disston Cross Cut Saw (filed and set)	13.33
1—8 inch Emery Wheel	5.33
1—Canvas Cover	16.00
1—Saw Table with adjustable rip gauge, cross cut gauge, saw mandrel, belt tightener and saw guard	188.00

1—Carpenter 5 H. P. Water Hopper Cooled, four cycle gasoline engine complete with battery box, two spark plugs, wrenches, oil can	\$260.00
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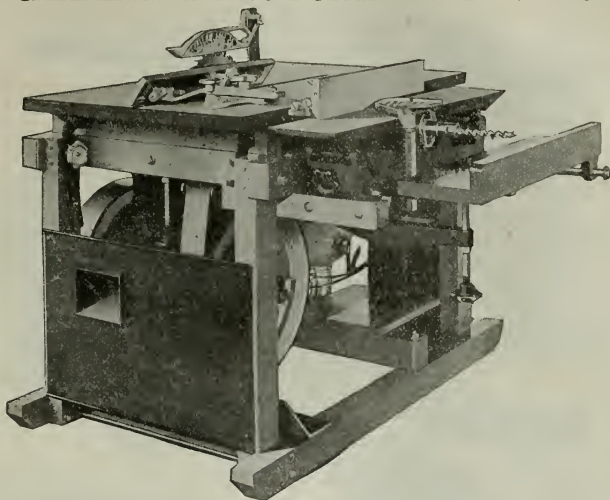
Carpenter No. 1-A Saw Rig complete with all attachments	\$506.66
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VARIOUS COMBINATIONS FURNISHED

Low-Tension friction drive magneto in connection with dry cells and coil	\$ 32.00
High-Tension gear-driven "Dixie" magneto (no dry cells or coil)	37.33
Steel plate table, bound around edges with 1½x1½ inch angles (in place of wood table) add	16.00
No. 1-A Saw Rig with 1—14 inch rip, 1—14 inch cross cut saw, gauges and 5 H. P. four cycle water hopper cooled gasoline engine ready to operate (no attachments)	469.33
Outfit complete with all attachments (without power)	246.66
Outfit complete with all attachments, with tight and loose pulley and arbor belt (without power)	273.33

Outfit complete with all attachments, with alternating current, single phase, 60 cycle motor, speed 1750 R. P. M. interchangeable, 110 or 220 volt, knife switch, wired and installed complete	\$646.66
Outfit complete with all attachments with alternating current, two or three phase, 60 cycle motor, speed 1720 R. P. M. interchangeable, 220 or 440 volt, knife switch, wired and installed complete	500.00
Outfit complete with all attachments with direct current motor, speed 1720 R. P. M., 110 or 220 volt, with starting box, wired and installed complete	626.66

CARPENTER No. 8 PORTABLE SAW RIG



SPECIFICATIONS OF THE CARPENTER No. 8 PORTABLE SAW RIG

Frame and Skid—3x4 inches clear maple.
Table—32x50x $\frac{1}{4}$ inch steel plate, bound around edges with 1 $\frac{1}{4}$ x1 $\frac{1}{4}$ inch angles. Table is hinged at rear and raised and lowered by raising screw and locked at front corners by brackets and hand nuts. Has removable wood throat block.
Rip and Jointer Gauges—adjustable from square to 45 degrees.
Cross Cut Gauge—adjustable from square to mitre either side.
Arbor Bearings—1 $\frac{1}{2}$ x3 $\frac{3}{4}$ inches, wick oiled.
Diameter of Arbor for Saw—1 inch.
Speed of Arbor—3000 R. P. M.
Largest Diameter of Saw—14 inches.
Capacity of Saw—3 inches on the rip.
Jointer—three knife cylindrical safety head.

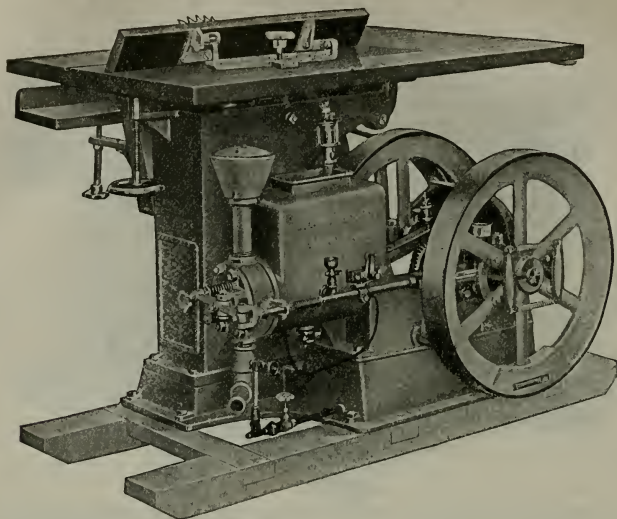
Length of Knives—6 $\frac{1}{2}$ inches.
Overall Length of Jointer Tables—40 inches.
Horizontal Travel of Boring Table—7 inches.
Vertical Adjustment of Boring Table—4 inches.
Sander—drum type, 6 $\frac{1}{4}$ inches wide, operated on arbor in place of jointer head.
Dado Head—operates on saw arbor 8 inches diameter, cuts 1 $\frac{1}{2}$ inches deep.
Overall Length of Outfit with all Attachments—5 feet.
Overall Width of Outfit with all Attachments—4 feet.
Height of Saw Table from Floor—37 inches.
Net Weight of Outfit with engine and all attachments—1300 pounds.

CARPENTER No. 8 PORTABLE SAW RIG ATTACHMENTS

1—12 inch Disston Rip Saw (filed and set).....	\$8.00
1—12 inch Disston Cross Cut Saw (filed and set).....	8.00
1—8 inch diameter, $\frac{1}{2}$ inch Dado Head.....	8.00
1—6 inch Jointer with circular safety head (three knives) all complete with adjustable gauge and safety guard.....	66.67
1—Boring Attachment complete with $\frac{1}{8}$, $\frac{1}{4}$ and $\frac{3}{8}$ inch bits.....	13.33
1—8 inch Emery Wheel.....	5.33
1—6 inch Drum Sander.....	6.67
1—Canvas Cover.....	13.33
1—Saw Table with iron adjustable rip gauge, cross cut gauge, saw mandrel and saw guard.....	190.66
1—4 H. P. Water Cooled, four cycle gasoline engine, complete with battery box, two spark plugs, wrenches, oil can.....	193.33
Carpenter No. 8 Saw Rig Complete with all Attachments.....	\$513.32

VARIOUS COMBINATIONS FURNISHED

Low-Tension friction drive magneto in connection with dry cells and coil.....	\$40.00
High-Tension gear-driven "Dixie" magneto (no dry cells or coil).....	37.33
No. 8 Saw Rig with 1—12 inch rip, 1—12 inch cross cut saw, gauges and 4 H. P. four cycle water hopper cooled gasoline engine ready to operate (no attachments).....	400.00
Outfit complete with all attachments (without power).....	320.00
Outfit complete with all attachments with tight and loose pulley and belt (without power).....	360.00
Outfit complete with all attachments with alternating current, single phase, 60 cycle motor, speed 1750 R. P. M. interchangeable, 110 or 220 volt, knife switch, wired and installed complete.....	680.00
Outfit complete with all attachments with alternating current, two or three phase, 60 cycle motor, speed 1720 R. P. M. interchangeable, 220 or 440 volt, knife switch, wired and installed complete.....	533.33
Outfit complete with all attachments with direct current motor speed 1720 R. P. M., 110 or 220 volt, with starting box wired and installed complete.....	653.33
Quick, Detachable Channel Iron Truck to carry this No. 8 Saw Rig from job to job.....	53.33
Special Adjustable Dado Heads, to cut any size from $\frac{1}{4}$ to 2 inches wide, can be mounted on this No. 8 Outfit, or on any of our other Saw Rigs.	
Sash Puller, Mortiser and Rounding Machine furnished on special order.	
Moulding Knives in any shape or form can be furnished as well as a special cutter head to carry same.	
An Adjustable Aluminum Saw Guard with spring steel Splitter is provided.	
This Guard conforms to the factory laws of any state.	



THE CARPENTER No. 2 ALL IRON PORTABLE SAW RIG

The Carpenter No. 2 All Iron Portable Saw Rig, was designed with a view to securing rigidity, strength and simplicity, in an outfit that would stand the hard wear and tear on the job, or in the shop. The engine and saw table column are mounted on a heavy iron base, making it an absolute rigid unit. The 5 H. P. water hopper cooled engine or electric motor pulls a 14 inch saw, which will rip 4 inch lumber.

The iron saw table is 26x36 inches, accurately planed, with screw adjustment for raising and lowering. The adjustable rip gauge is set in a dove-tail groove. The cut-off gauge is adjustable from square to miter in either direction. A wooden table is attached to the iron table to protect the engine or motor from saw dust. The saw mandrel is made with a long projection on the collar end so that a varying thickness of cutter or dado head up to 2 inches may be used.

Each outfit is thoroughly tested and ready to run when delivered, and is sold under an absolute guarantee to be entirely satisfactory. It is a complete and economical portable power plant, guaranteed to give you no trouble.

SPECIFICATIONS CARPENTER NO. 2 ALL IRON PORTABLE SAW RIG

Specifications

Column—Iron box section.
Skids—4x6 inch yellow pine.
Table—Iron accurately planed.
Over wood Extension Table is 35½x55 inches.
Belt—3½ inches wide, tightened by belt tightener.
Arbor Bearings—1 3-16x3½ inches.
Diameter of Arbor for Saw—1 inch.
Speed of Arbor—2600 R. P. M.
Largest Diameter of Saw—14 inches.

Capacity of Saw—ripping 4 inches.
Gasoline Consumption—about 3 gallons per day.
Overall Length of Outfit—5 feet, 3 inches.
Overall Width of Outfit—42 inches.
Height of Table from Floor—37½ inches.
Net Weight of Outfit with engine and all attachments—
1440 pounds.
Engine installed in Outfit 5 H. P., Carpenter hopper cooled.

THE CARPENTER No. 2 ALL IRON PORTABLE SAW RIG ATTACHMENTS

1—14 inch Disston Rip Saw (filed and set).....	\$10.67
1—14 inch Disston Cross Cut Saw (filed and set).....	10.67
1—3 inch diameter, ½ inch Dado Head.....	8.00
1—Boring Table complete with one ½ inch, ¾ inch and 1 inch bit, chuck and key for bit chuck set screw	21.33
1—4 inch Jointer (4 knives) with adjustable iron block and gauge.....	29.33
1—8 inch Emery Wheel.....	5.33
1—Canvas Cover	14.67

1—Saw Table with adjustable rip gauge, cross cut gauge, saw mandrel, belt tightener and saw guard	\$173.33
1—Carpenter 5 H. P. Water Hopper Cooled four cycle gasoline engine complete with battery box, two spark plugs, wrenches, oil can.....	260.00

Carpenter No. 2 Saw Rig complete with all attach- ments	\$533.33
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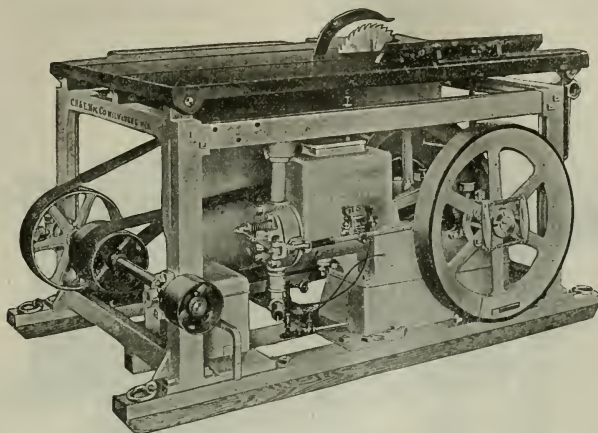
VARIOUS COMBINATIONS FURNISHED

Low-Tension friction drive magneto in connection with dry cells and coil	\$40.00
High-Tension gear-driven "Dixie" magneto (no dry cells or coil)	37.33
No. 2 Saw Rig with 1—14 inch rip, 1—14 inch cross cut saw, gauges and 5 H. P. four cycle water hopper cooled gasoline engine, ready to operate (no attachments)	454.66
Outfit complete with all attachments (without power)	273.33
Outfit complete with all attachments, without power, but with tight and loose pulley and arbor belt.....	300.00

Outfit complete with all attachments, with alternat- ing current, single phase, 60 cycle motor, speed 1750 R. P. M. interchangeable, 110 or 220 volt, knife switch, wired and installed complete.....	\$666.66
Outfit complete with all attachments, with alternat- ing current, two or three phase, 60 cycle motor speed 1720 R. P. M. interchangeable, 220 or 440 volt, knife switch, wired and installed complete.....	540.00
Outfit complete with all attachments, with direct current motor, speed 1720 R. P. M., 110 or 220 volt, with starting box, wired and installed com- plete	653.33

Special Adjustable Dado Heads, to Cut any Size from ¼ to 2 inches wide can be Mounted on this No. 2 Outfit.

CARPENTER No. 4 ALL IRON PORTABLE SAW RIG



SPECIFICATIONS OF THE CARPENTER No. 4 ALL IRON PORTABLE SAW RIG

Frame Ends—cast iron channel section.
 Skid—4 inch channel iron, reinforced with 4x4 inch yellow pine.
 Upper Side Members—3 inch channel irons.
 Table—42x68 inches iron, accurately planed and well ribbed on under side. Hinged at rear end and raised and lowered by raising screw. Locked in place by steel links and hand wheels at corners of table. Iron throat plate where saw projects through table.
 Belts—both 4 inch double ply.
 Countershaft—1½ inches diameter.
 Speed of Countershaft—650 R. P. M.
 Arbor Bearings—1½x4½ inches.
 Diameter of Arbor for Saw—1½ inches.
 Speed of Arbor—2500 R. P. M.

Largest Diameter Saw—20 inches.
 Capacity of Saw—ripping 6 inches, cross cutting 8 inches.
 Gasoline Consumption—about 4 gallons per day.
 Jointer Head—4 knife cylindrical safety head. Jointer Table attached to main table—adjusted by hand wheel.
 Jointer Head covered by automatic safety guard.
 Boring Attachment—vertical type.
 Size of Bits Furnished—one each ½, ¾ and 1 inch.
 Speed of Bits—1200 R. P. M.
 Overall Length of Outfit—6 feet, 6 inches.
 Overall Width of Outfit—53 inches.
 Height of Table from Floor—40 inches.
 Net Weight of Outfit with Engine—2400 pounds.

When installing an Electric Motor in any of our outfits, special attention must be given to the voltage on direct current service and the phase and voltage when mounting either single phase, two phase or three phase motor, with the correct cycle, speed, etc.

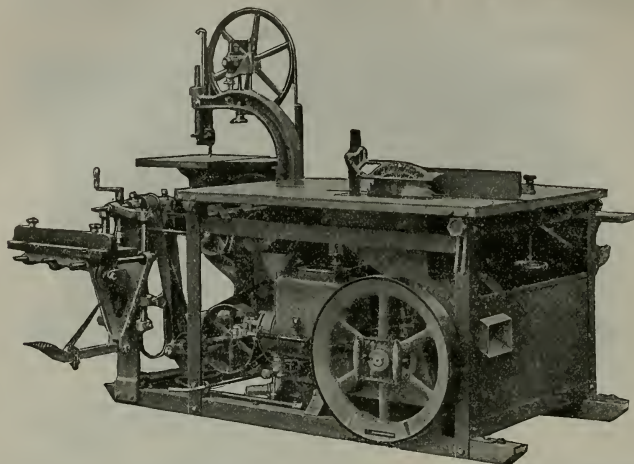
THE CARPENTER No. 4 ALL IRON PORTABLE SAW RIG ATTACHMENTS

1—14 inch Disston Rip Saw (filed and set).....	\$10.67
1—14 inch Disston Cross Cut Saw (filed and set).....	10.67
1—18 inch Disston Cross Cut Saw (filed and set).....	16.00
1—18 inch Disston Rip Saw (filed and set).....	16.00
1—Vertical Boring Attachment with belts, bits and boring table.....	46.67
1—6 inch Cylindrical Jointer (4 knives) with adjustable iron jointer table attached to main saw table, and jointer gauge.....	53.33
1—10 inch Emery Wheel.....	8.00
1—Canvas Cover.....	21.33
1—Saw Table, with adjustable rip gauge, cross cut gauge, saw mandrel, belts and saw guard....	304.00
1—Carpenter 6 H. P. Water Hopper Cooled Four Cycle gasoline engine complete with battery box, two spark plugs, wrenches, oil can.....	293.33
Carpenter No. 4 Saw Rig complete with all attachments.....	\$780.00

VARIOUS COMBINATIONS FURNISHED

Low-Tension friction drive magneto in connection with dry cells and coil.....	\$40.00
High-Tension gear-driven "Dixie" magneto (no dry cells or coil).....	37.33
No. 4 Saw Rig with 1—14 inch rip, 1—14 inch crosscut saw, gauges and 6 H. P. four cycle water hopper cooled gasoline engine all complete ready to operate (no attachments).....	629.33
Outfit complete with all attachments, (without power).....	486.66
Outfit complete with all attachments, with alternating current, single phase, 60 cycle motor, speed 1750 R. P. M. interchangeable, 110 or 220 volt, knife switch, wired and installed complete.....	880.00
Outfit complete with all attachments, with alternating current two or three phase 60 cycle motor, speed 1720 R. P. M. interchangeable 220 or 440 volt, knife switch, wired and installed complete.....	753.33
Outfit complete with all attachments, with direct current motor, speed 1720 R. P. M., 110 or 220 volt, with starting box, wires and installed complete.....	866.66

CARPENTER No. 6 PORTABLE SAW RIG



SPECIFICATIONS OF THE CARPENTER No. 6 PORTABLE SAW RIG

Skids—3 inch angles reinforced with $3\frac{1}{2} \times 3\frac{1}{2}$ inch timbers.

Legs and Under Members— $2\frac{1}{2} \times 2\frac{1}{2}$ inch angles.

Table— $42 \times 56 \times \frac{1}{4}$ inch steel plate, bent around edges with $1\frac{1}{2} \times 1\frac{1}{4}$ inch angles. Table is hinged

at rear and raised and lowered by raising screw and locked at front corners by brackets and hand nuts. Has removable wood throat block.

Rip and Jointer Gauges—Adjustable from square to 45 degrees.

Cross Cut Gauge—Adjustable from square to mitre either side.

Arbor Bearings— $1\frac{1}{2} \times 3\frac{1}{2}$ inches, wick oiled.

Diameter of Arbor for Saw—1 inch.

Diameter of Countershaft— $1\frac{1}{2}$ inches.

Speed of Arbor—3,000 R. P. M.

Speed of Countershaft—775 R. P. M.

Largest Diameter of Saw—14 inches.

Capacity of Saw—3 inch rip, 4 H. P. engine, 4 inch rip 5 H. P. engine.

Jointer—Four knife cylindrical safety head.

Stopped and started by friction clutch on countershaft.

Length of Knives—6 $\frac{1}{2}$ inches.

Overall Length of Jointer Tables—40 inches.

Height of Jointer Tables from Floor—33 inches.

Borer and Mortiser Table— 22×8 inches.

Horizontal Travel of Table—8 inches.

Vertical Adjustment of Table—7 inches.

Capacity up to $1\frac{1}{2}$ inch diameter bit, or $\frac{3}{4}$ inch square hollow mortise chisel.

Band Saw Table— $18 \times 18\frac{1}{2}$ inches, can be tilted to 45 degrees.

Horizontal Capacity—20 inches.

Vertical Capacity—8 inches.

Width of Saw Blade—Up to $\frac{3}{4}$ inch.

Height of Band Saw Table from Floor—41 inches.

Stopped and started by shifting belt.

Sander—Disc type, 14 inch diameter, operated on saw arbor.

Dado Head Operates on Saw Arbor—8 inch diameter, cuts $1\frac{1}{4}$ inches deep.

Overall Length of Outfit with all Attachments—7 $\frac{1}{2}$ feet.

Overall Width of Outfit with all Attachments—5 feet.

Height of Saw Table from Floor—38 inches.

Net Weight of Outfit with engine and all attachments, with 4 H. P. engine 2,400 pounds, with 5 H. P. engine 2,500 pounds.

THE CARPENTER No. 6 PORTABLE SAW RIG ATTACHMENTS

1—12 inch Disston Rip Saw (filed and set).....	\$8.00
1—12 inch Disston Cross Cut Saw (filed and set).....	8.00
1—8 inch diameter, $\frac{1}{2}$ inch Dado Head.....	8.00
1—20 inch Band Saw complete with belt and saw, set of brazing tongs and brazing clamp.....	100.00
1—6 inch Jointer with circular safety head (four knives) all complete with belt, adjustable gauge and safety guard.....	126.66
1—Boring and hollow-chisel mortising attachment complete with belt, $\frac{3}{4}$, $\frac{1}{2}$ and $\frac{1}{4}$ inch bits and one $\frac{3}{8}$ inch square hollow mortising chisel and bit (other sizes of square chisels on special order).....	86.66
1—8 inch Emery Wheel.....	5.33
1—14 inch Sander and Wax.....	8.00
1—Canvas Cover.....	21.33
1—Saw Table with iron adjustable rip gauge, cross cut gauge, saw mandrel countershaft, belt and saw guard.....	314.66
1—Carpenter 4 H. P. Water Hopper Cooled, four cycle gasoline engine complete with battery box, two spark plugs, wrenches, oil can.....	206.66

Carpenter No. 6 Saw Rig complete with all attachments.....\$593.30

VARIOUS COMBINATIONS FURNISHED

Low-Tension friction drive magneto in connection with dry cells and coil.....	\$40.00
High-Tension gear-driven "Dixie" magneto (no dry cells and coil).....	37.33
Quick Detachable Channel Iron Truck to carry this No. 6 Saw Rig from job to job.....	66.67
Special Adjustable Dado Heads, to cut any size from $\frac{1}{8}$ to 2 inches wide, can be mounted on this No. 6 Outfit, or on any of our other saw rigs.	
Sash Puller Mortiser and Routing Machine furnished on special order.	
Moulding Knives in any shape or form can be furnished, as well as a special cutter head to carry same.	
An adjustable aluminum saw guard with spring steel splitter is provided.	
This guard conforms to the factory laws of any state.	

CARPENTER No. 5 RAPID CROSS-CUT SAW

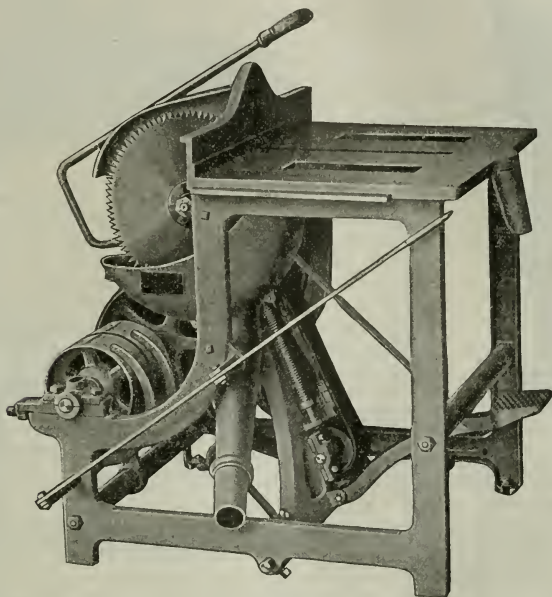


Fig. No. 5

Carpenter No. 5 Rapid Cut-off Saw with one 16 inch cross cut saw all complete, ready to operate and belt up to power.....	\$193.33
Carpenter No. 5 Rapid Cut-off Saw with one 16 inch cross cut saw, mounted on heavy skid in connection with Carpenter 4 H. P. gasoline engine, all belted complete.....	506.66
Carpenter No. 5 Rapid Cut-off Saw with one 16 inch cross cut saw, Mounted on Truck , in connection with Carpenter 4 H. P. gasoline engine, all belted complete.....	546.66
Carpenter No. 5 Rapid Cut-off Saw with one 16 inch cross cut saw, mounted on heavy skid in connection with Carpenter No. 6 Saw Rig with one 12 inch rip, one 12 inch cross cut saw, gauges and Carpenter 4 H. P. gasoline engine, installed, all belted complete	786.66
Carpenter 5 H. P. Water Hopper Cooled Engine, mounted in place of the standard 4 H. P. engine add.....	53.33
Magneto complete with bracket.....	37.33

SWING CUT-OFF SAW

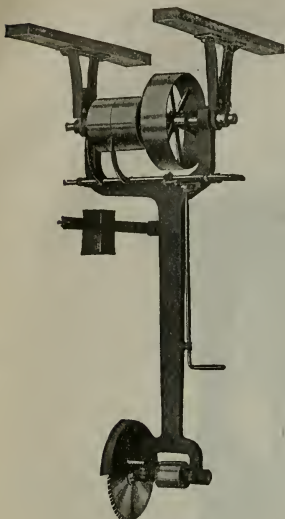


Fig. 571

This Swing Cut-off Saw is admirably adapted for motive drive. The most desirable construction is to mount the motor direct on the frame. In this way the power is always self-contained with the machine, and where necessary it can be moved to suit the convenience of the purchaser.

The motor driven swing saw can be furnished either with wall brackets or ceiling hangers, but hangers are always furnished unless otherwise specified. To bolt the motor to the ceiling, we can furnish a special base plate to receive the motor and the hangers, but the price will be the same in either case.

The frame is cast in one piece, cored out hollow. There may be cheaper ways of making frames, but none better. The mandrel is carefully made of steel, with pulley shrunk on solid. The bearings for mandrel are $1\frac{1}{4}$ inches in diameter, 5 inches long, and are provided with a self-oiling capillary felt to feed oil as required. The hangers are adjustable, making it a very simple matter to properly level up the machine. The frame is hung to the hangers in such a manner that it is impossible for the weight of the frame to ride on the shaft, insuring shaft to work free and easy. And a very useful feature of this machine is the convenient arrangement of the belt-shifter. The belt cannot creep from one pulley to the other, and shifter-handle is located convenient to operator. The

shifter is reversible so that the machine can be belted to line-shaft either in front or to rear of machine.

When specially so ordered, the machines can be furnished with wall brackets (instead of hangers) to suit for hanging the machine to wall instead of ceiling, there being no extra charge for this arrangement.

The machine is made in six sizes, viz., $5\frac{1}{2}$, 6, $6\frac{1}{2}$, 7, $7\frac{1}{2}$, and 8 foot, measured from ceiling to mandrel. When machine is hung, the mandrel should be about 36 to 38 inches above floor. Either of two size sawshields is furnished; one for saws 18 inches and smaller, or one for saws 24 inches and smaller.

DIMENSIONS

Size of mandrel pulley.....	5 x 5 inches
Size of tight and loose pulleys.....	10 x 5 inches
Speed of countershaft, per minute.....	550 revolutions
Making speed for 18-inch saw, per minute.....	2000 revolutions
Length of belt (5-inch) for $5\frac{1}{2}$ and 6 foot machine.....	12 feet 2 inches
Length of belt (5-inch) for $6\frac{1}{2}$ and 7 foot machine.....	14 feet 2 inches
Length of belt (5-inch) for $7\frac{1}{2}$ and 8 foot machine.....	16 feet 2 inches
Size of hole in saws.....	$1\frac{1}{8}$ inches
Shipping weight.....	450 pounds

All sizes of machines same price. List each, \$50.00.

EQUIPMENT

Each machine is furnished with one saw-shield, one mandrel wrench and belt-shifter. Unless otherwise specified, all orders will be filled with the $6\frac{1}{2}$ foot machine, with 18-inch saw-shield, without saw or belt. See Index for Circular Saws and Belt.

AMERICAN CHAMPION POWER DRAG SAW

Strong, Durable, Easy to Operate and a Rapid Worker

Friction Feed is very simple, positive and effective

Balance Wheel, large, heavy counter balanced, giving strong, steady motion.

Capacity, 30 to 40 cords per day.

Power required, 2 to 4 horse power.

Price with tight pulley\$100.00

Price with tight and loose pulley... 110.00

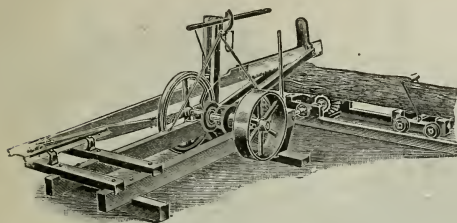


Fig. 2371

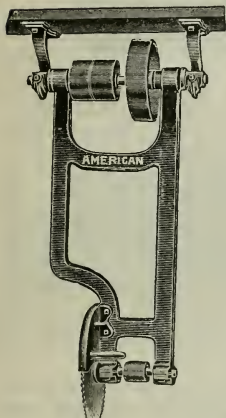


Fig. 2372

AMERICAN LIGHT SWING SAW

This machine can be used for a large variety of light work and is especially useful in woodworking establishments where a large heavy frame is unnecessary. The length of frame permits the machine being suspended over an ordinary work bench. Frame of solid cast iron, strong and very rigid.

Mandrel and pulley are turned from solid steel.

Guard is furnished which has handle for operating the machine.

List price, without Saws.....\$40.00

SEE INDEX FOR CIRCULAR SAWS

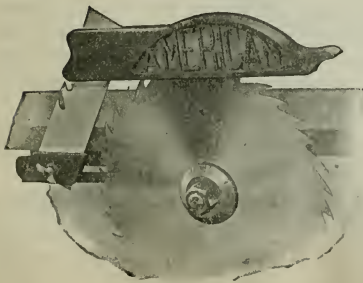


Fig. 2373

AMERICAN SAW GUARD

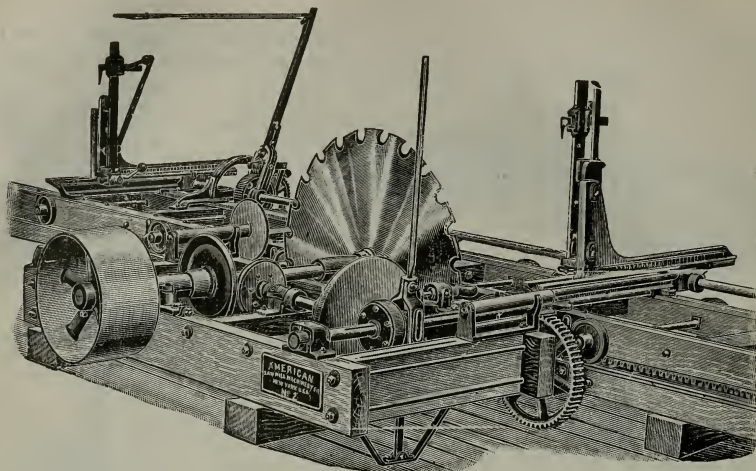
Guard Your Saws and Prevent Accidents and Law Suits

The Guard shown here is extremely simple and effective and can easily be attached to any type of rip and cut-off saw bench. Made entirely of steel and iron. Protects saw and operator alike. Standard guards are made right or left hand.

No. 1. For saws 6 to 12 inches.....List \$5.00

No. 2. For saws 10 to 16 inches....." 5.50

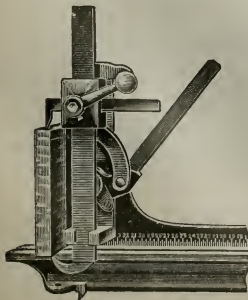
No. 3. For saws 14 to 20 inches....." 6.00



AMERICAN VARIABLE FRICITION FEED SAW MILLS

No. of Mill	Length of Husk	Width of Husk	Size of Husk Timbers	Diameter of Mandrel	Largest Saw that can be used	Mandrel Pulley	Length of Carriage (Longer Carriages made to order)	Length of Rack	Size of Carriage Timbers	Width of Carriage	Size of Truck Wheels	Diameter of Axles	Number of Trucks	Head Blocks Open	Length of Track Steel, feet	Weight	Horse Power Required	List Price (Without Blade)
1	7' 0"	3' 0"	3 1/2" X 7 1/2"	12	52"	20x10	16'	22'	3 1/2" X 5 1/2"	26"	6"	1 1/2"	4	34	40'	2800	6 to 15	\$310.00
2	7' 7"	3' 3"	3 1/2" X 9 1/2"	12	54"	20x10	20'	22'	3 1/2" X 5 1/2"	26"	7"	1 1/2"	6	38	48'	3550	6 to 20	375.00
3	8' 0"	3' 6"	3 1/2" X 9 1/2"	12	54"	20x10	16'	22'	4 1/2" X 6 1/2"	36"	8"	1 1/2"	4	44	40'	3900	8 to 25	395.00
3 1/2	8' 0"	4' 0"	4 1/2" X 11 1/2"	12	60"	20x12	24'	32'	4 1/2" X 6 1/2"	36"	8"	1 1/2"	6	44	56'	4700	10 to 30	450.00
4	8' 6"	4' 0"	4 1/2" X 11 1/2"	12	60"	20x12	24'	32'	5 1/2" X 5 1/2"	40"	10"	1 1/2"	6	48	56'	5400	15 to 40	550.00

This Mill combines all of the best features which have for many years entered into the construction of Circular Saw Mills. Simplest in design. **Cuts more lumber with the same power than any mill made.**



Each Mill (except No. 1) is fitted with the GIANT duplex Steel Dogs (see cut to left), Combined Ratchet Set Works and Quick Receder, Rolled Steel Track, Self Oiling Bearings throughout, Way Timbers framed together in sections with steel track attached, and Improved Belt Tightener.

Also made with Wire Cable Drive, with Log Beam Carriage and with two different styles of Belt Feeds.

We furnish Saw Dust Blowers, Conveyors, Lumber Trucks and a full line of Saw Mill Accessories. See index.

Also full line of Heavy Stationary Circular Saw Mills, Steam Niggers, Jackers, etc. See index.

AMERICAN UP-TO-DATE POWER FEED SHINGLE MACHINE

A Reliable, Low Priced Machine

Just right for small mills, farmers and others having light power who want to make a few thousand shingles a day.

Makes a Perfect Shingle any Length from 16 to 24 Inches

HAS KNOT SAW AND EDGER for edging or jointing the shingles when made from round or split stock.

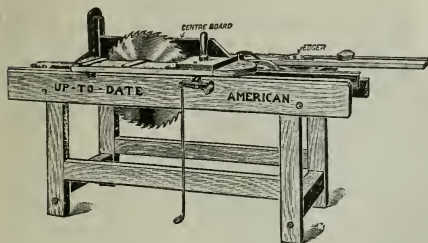
MAKES HEADING OR CRATE SLATS up to 36 inches long, if desired.

By removing the center board at rear of carriage it can be used for Bolting and other kinds of sawing.

Price with Edger\$115.00

Price without Edger 100.00

Price extra for 36 inch Machine 15.00



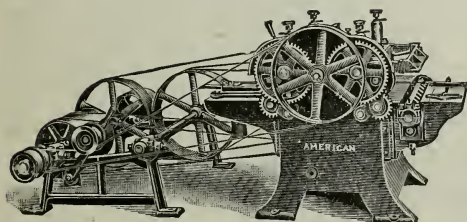
Up-to-Date Shingle Machine

AMERICAN "TRIUMPH" PLANER, MATCHER AND MOLDER

Two Sizes—20 and 24 inch
Single or Double Surfacers

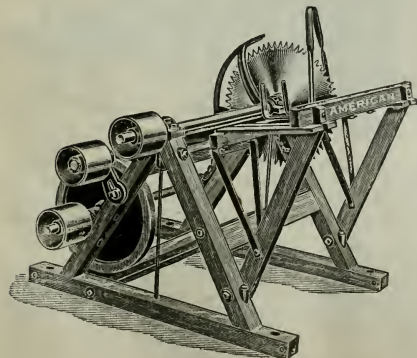
This is a very compact, rigid machine, and is designed to economize space and withstand the hardest usage as well as to do the best class of work.

Adapted for use where a machine is required for a large variety of work, such as planing and matching, beading, working flooring, ceiling, siding, casing, wainscoting, and a large variety of molding and trim.



Triumph Planer

Style	Single Surfacers Inches		Double Surfacers Inches	
Size	20	24	20	24
Price Top Rolls Driven	\$440.00	\$490.00	Not Made	
Price Top and Bottom Rolls Driven	470.00	540.00	\$560.00	\$630.00



No. 5. Cord Wood Saw

CORD WOOD SAWS

This shows our style No. 5, with balance wheel lowered.

We furnish a complete line covering all styles of machines.

No. 3.	Plain swing table.....	List	\$21.00
No. 4.	Extension swing table	"	23.00
No. 5.	Pole saw, as illustrated.....	"	27.00
No. 6.	Sliding table	"	27.00
No. 8.	Heavy extension swing table. "	"	33.00
No. 9.	Rolling table	"	30.00

SAWS NOT INCLUDED IN ABOVE PRICES. SEE INDEX FOR CIRCULAR SAWS.

JOINTERS

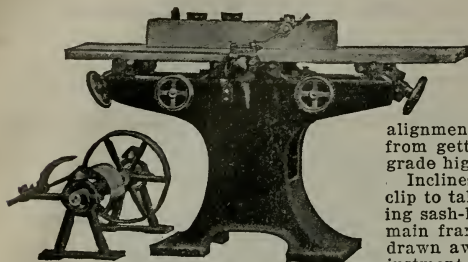


Fig. 16

The tables have wide flanges and are heavily ribbed, the rear table being arranged with an offset along the front side for rabbeting.

The fence is made with a vertical graduated scale and is adjustable to any angle to 45°. Furnished with one pressure spring to hold work to the table. Convenient for working ribs, narrow stock, etc.

The head can be furnished either with round Safety Head or with four sided Square Head, the latter having two sides of regular knives and two sides with T slots for special cutters.

Jointer No.	8	12	16
Length of knives, inches	8	12	16
Length of front table, inches	31½	40	40
Length of rear table, inches	31½	40	40
Length over all, inches	65	82	82
Width of table, inches	13	15½	19½
Height of table from floor, inches	33	33½	33½
Diameter of pulley on head, inches	3½	4	4
Widest belt to be used, inches	2½	4	4

The frame is made on correct lines and principles. It is cast in one solid piece, with wide base bearing on the floor at both ends of machine. This form of frame gives the machine stability and stiffness. Bearings are made with special care, the lower part being cast solid with frame, insuring permanent alignment. A cover is cast over the end to prevent oil from getting on the operator's clothes. Fitted with best grade high-speed babbitt.

Inclines on which tables rest provided with adjustable clip to take up wear. These inclines are bolted to a sliding sash-like casting, which is dovetailed and gibbed into main frame, allowing the tables to be horizontally withdrawn away from the head without disturbing their adjustment. This is convenient when sharpening or changing knives.

Jointer No.	8	12	16
Size of bearing, pulley end, inches	1¼x4½	1½x7	1½x7
Size of bearing, operator end, inches	1¼x3½	1½x5	1½x5
Size of tight and loose pulleys, inches	8x3	10x5	10x5
Speed, countershaft, R. P. M.	900	800	800
Giving head pencil, R. P. M.	4000	4000	4000
Floor space, exclusive of countershaft, inches	21x64	31x82	35x82
Horse-power required	2 to 3	3 to 4	3 to 4
Shipping weight, lbs.	800	1375	1525
Price	\$110.50	\$127.50	\$140.25

Also made in 18, 20 and 24 inch sizes.

Prices and information on application.

PLANERS

Of extremely compact design, occupying a minimum amount of floor space, yet so thoroughly well made and carefully designed, that it answers every requirement of the average user.

The feed is driven from a pulley on the countershaft to a pair of tight and loose pulleys on the machine. A convenient belt shifter is provided on the machine for starting and stopping the feed. The rate of feed is 25 feet per minute.

The machine is not made with lower rolls driven, the upper rolls only being driven. The upper rolls are hung with springs. The front and rear rolls are 10 inches apart from center to center and are 2½ inches in diameter, made of solid steel.

A guard rail is placed in front of the upper front roll to prevent accident to operator when feeding short stock. The countershaft may be belted in any direction to line shaft—above or below; to front or to rear.

Regular equipment: Each machine is furnished with one countershaft having self-oiling loose pulley, one pair of two knives and two wrenches.

Planer No.	118	124
Width and thickness will plane, inches	17¾x6	23¾x6
Length of table, inches	44	44
Width of drive belt, inches	4	4
Size of tight and loose pulley, inches	10x5	10x5
Speed of countershaft, R. P. M.	825	825
Giving a head speed, R. P. M.	4000	4000

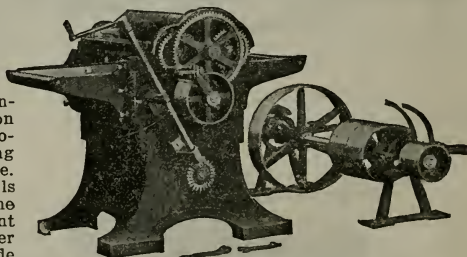


Fig. 118

Planer No.	118	124
Size of bearings on head, inches	5x1½	5x1½
Width of feed belt, inches	2	2
Floor space, exclusive of countershaft, inches	44x45	44x51
Horse-power required	3 to 5	4 to 5
Shipping weight, lbs.	1250	1400
Price	\$144.50	\$170.00

FOR OTHER STYLES OF WOOD WORKING TOOLS AND MACHINERY, SEE INDEX

CARPENTER WORM GEAR DRIVE TRENCH PUMP

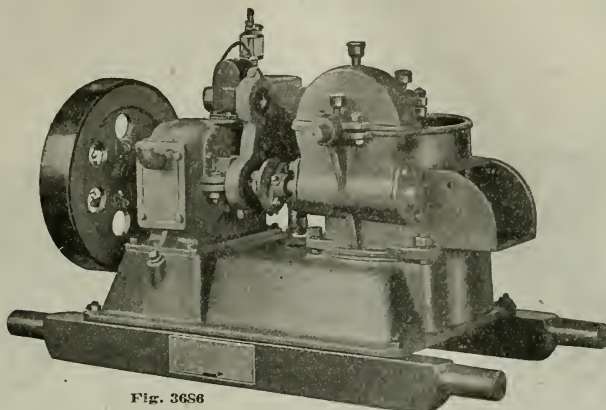


Fig. 3686

Specifications of the Carpenter Power Driven Diaphragm Bilge Trench Pump

Engine direct connected through flexible coupling to worm and worm gear on pump.

Stroke of Pump—55 per minute.

Capacity—3 inch, 3000 gallons per hour.

4 inch, 6000 gallons per hour.

Gasoline Consumption—about 1 gallon per day.

Extreme Suction Lift—20 feet.

Overall Length—45 inches.

Overall Width—30 inches.

Truck Wheels—front 8x3 inches, rear 14x3 inches
Net Weight of Outfit with engine and 3 inch pump on skid—475 pounds.

Net Weight of Outfit with engine and 4 inch pump on skid—525 pounds.

Engine Mounted on Outfit—2 H. P. Carpenter water hopper cooled.

High Tension Magneto mounted. (No dry cells or coil.)

THE SUMTER HIGH-TENSION "DIXIE" MAGNETO

The Sumter High-Tension "Dixie" Magneto mounted on this outfit is of high efficiency, having been designed to run single-cylinder engines of the jump spark type. It is water and oilproof.

Dry cells and coil are entirely done away with.

Engine can be started as easy with this High-Tension Magneto as with dry cells and coil. Note priming cup on side of engine cylinder.

THE CARPENTER POWER DRIVEN DIAPHRAGM BILGE TRENCH PUMP

Carpenter No. 3 Trench Pump on skid complete with three inch side suction pump mounted in connection with two horsepower, four cycle, water hopper cooled gasoline engine (capacity 3,000 gallons per hour).....	\$213.33
Carpenter No. 3 Trench Pump complete on truck.....	233.33
Carpenter No. 4 Trench Pump on skid, complete with four inch side suction pump, mounted in connection with two horsepower, four cycle, water hopper cooled gasoline engine (capacity 6,000 gallons per hour).....	233.33
Carpenter No. 4 Trench Pump complete on truck.....	253.33
Complete housing for outfit.....	35.00

See Index for Suction Hose.

THE CARPENTER ENGINE

The Carpenter water hopper cooled gasoline engine is the simplest and best constructed engine that a contractor can buy. Its fuel consumption and cost of operation is lower than any other engine on the market. This has been proven many times by actual tests and records kept by contractors on the job. Compactness, accessibility, reliability and simplicity were developed to a high degree in the construction of this engine. As a result the Carpenter engine occupies less space and weighs less for the power it develops than any other engine manufactured. For that reason it is well adapted for installation in Portable Saw Tables and other portable machines for use on the job.

It is built for rough service and will stand considerable abuse from inexperienced operators.

It is of the four cycle type which insures fuel economy—hopper cooled which makes it free from tanks, radiators piping and circulating pumps and insures efficient cooling.

It is designed specially for the contracting trade for operating Portable Saw Rigs, Power Driven Bilge and Centrifugal Pumps, Builder's Hoists, Mortar Mixers, etc.

The steady increase in the sale of the Carpenter line of Contractor's Equipment proves positively that its economy and reliability has been tested out and proven.

We stand back of each and every one of our machines with a guarantee that it must prove to the absolute liking and satisfaction of the purchaser or it may be returned at our expense and any money paid will be refunded.

THE CARPENTER WATER HOPPER COOLED GASOLINE ENGINE

Carpenter gasoline engine four cycle, water hopper cooled, with hit and miss type of governor, high grade jump spark ignition and suction feed gasoline vaporizer, all complete ready to run.....	\$106.66
2 H. P. engine complete with battery box, two spark plugs, tools, lubricator, grease cups, etc.....	133.33
3 H. P. engine complete with battery box, two spark plugs, tools, lubricator, grease cups, etc.....	206.66
4 H. P. engine complete with battery box, two spark plugs, tools, lubricator, grease cups, etc.....	260.00
5 H. P. engine complete with battery box, two spark plugs, tools, lubricator, grease cups, etc.....	293.33
6 H. P. engine complete with battery box, two spark plugs, tools, lubricator, grease cups, etc.....	40.00
Low-Tension friction drive magneto in connection with dry cells and coil.....	37.33
High-Tension gear-driven "Dixie" magneto (no dry cells or coil).....	

CARPENTER GASOLINE POWER DRIVEN DIAPHRAGM TRENCH PUMP

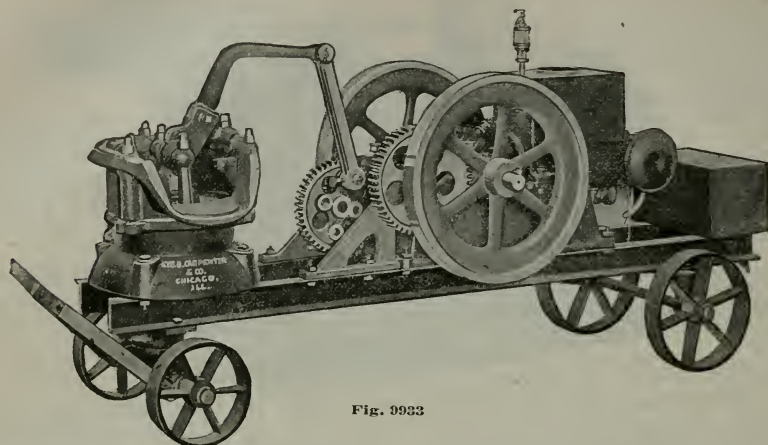


Fig. 9933

In offering this Power Pump to the trade, we know without a doubt that we have reached perfection in the gasoline driven trench pump. We have sold various trench pumps for a number of years, but none of them came up to what we believed a pump of this style should be. Our experience in dealing with contractors all over the United States, and knowledge of their working problems, was largely responsible for this pump, which is made in accordance with specifications to meet any emergency. In order to reach this state of proficiency, it was necessary to make numerous tests on actual construction work under all conditions, and this pump met them without a finch.

The engine is a great big strong full rated three horse power, capable not only of operating the single pump which is furnished with this outfit, but two pumps in battery which can be made by the addition of a double pump lever. Another great advantage is that there are four speeds to the pump, controlled by a series of connections on the pump jack whereby it is possible to run the outfit very slow to take care of small seepage, or it can be regulated to the maximum capacity of the pump. See illustration.

We call particular attention to the large water hopper, full pattern main frame, extra large high grade crank shaft, unusually efficient carbureter, and improved governor. Every part is made from gigs and is interchangeable. The specifications are very liberal. Every outfit is carefully tested before shipping.

The entire outfit is mounted complete on a steel channel iron truck making it light and at the same time the strongest outfit on the market, there being no wood in its construction.

The cost of operation is very low. The gasoline consumption is approximately two gallons every eight working hours. The capacity of the outfit mounted complete with 3-inch side suction Carpenter Diaphragm Pump is 4,000 gallons per hour, or mounted in connection with 4-inch side suction Carpenter Diaphragm Pump 6,000 gallons per hour.

Take special note of these specifications:

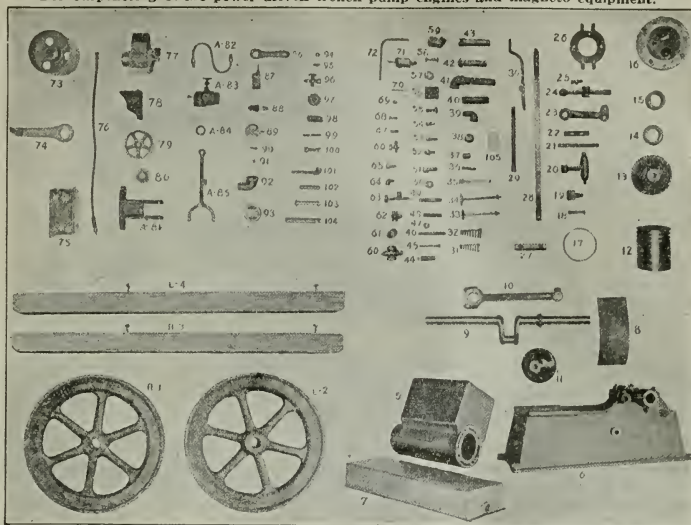
Engine.....	Full three horsepower	Diameter crank shaft.....	1 $\frac{5}{8}$ inches
Cylinder bore.....	4 $\frac{1}{2}$ inches	Diameter crank pin.....	1 $\frac{3}{8}$ inches
Cylinder stroke.....	6 inches	Length main bearings.....	3 inches
Diameter fly wheel.....	22 inches	Diameter drive pulley.....	8 inches
Length overall.....	46 inches	Face drive pulley.....	4 inches
Height overall.....	24 inches	Weight of outfit complete, 3-inch pump.....	675 lbs.
Width overall.....	24 inches	Weight of outfit complete, 4-inch pump.....	715 lbs.
List price complete, 3 inch suction.....			\$120.00
List price complete, 4 inch suction.....			144.00

Price does not include suction hose.

FOR SUCTION HOSE AND FITTINGS, SEE INDEX

REPAIR PARTS

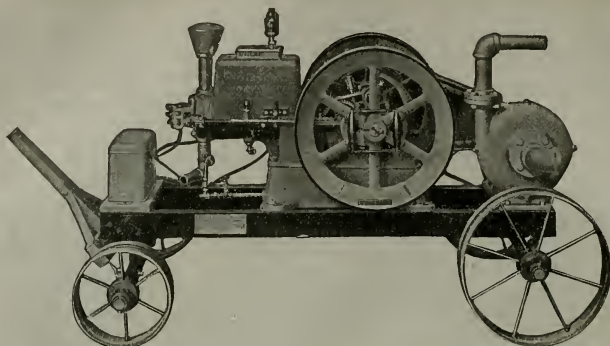
For Carpenter gasoline power driven trench pump engines and magneto equipment.



In ordering repair parts or extras always specify the items wanted by giving both the name and number of part.

No.	NAME OF PART	3 H. P.	No.	NAME OF PART	3 H. P.
R-1	Balance Wheel (right hand).....	\$6 10	54	Rocker Arm Roller Pin.....	0.28
L-2	Balance Wheel (left hand).....	6.10	55	Screw for Fastening Push Rod to Rocker Arm.....	.28
R-3	Skid (right hand).....	1.40	56	Fiber Insulation on Rocker Arm.....	.18
L-4	Skid (left hand).....	1.40	57	Cam Roller on Rocker Arm.....	.28
1	Cylinder.....	22.50	58	Tappet Arm Supporting Pin.....	.18
6	Base.....	10.30	59	Tappet Arm Supporter.....	.18
7	Gasoline Tank.....	3.10	60	Draining Valve.....	.65
8	Oil Guard.....	1.00	61	Nipple for Connecting Draining Valve.....	.10
9	Crank Shaft.....	12.65	62	Check Valve on Gasoline Tank.....	.65
10	Connecting Rod.....	4.65	63	Mixer and Needle Valve.....	.75
11	Muffler.....	4.65	64	Elbow for Cam Gear Supporting Stud.....	.28
12	Piston.....	5.65	65	Oil Cup for Cam Gear Supporting Stud.....	.28
13	Cam Gear.....	3.28	66	Relieve Cock.....	.65
14	Crank Shaft Pinion (steel).....	2.35	67	Solderless Union on Feed Pipe.....	.28
15	Governor Collar.....	3.75	68	Screw to Fasten Trip Arm to G. Gr Sup. S.....	.28
16	Cylinder Head.....	4.25	69	Traveler on End of Trip Arm.....	.10
17	Piston Ring.....	.95	70	Contact Pin on Cam Gear.....	.10
18	Governor Weight Supporting Pin.....	.18	71	Automatic Grease Cup on Connecting Rod.....	1.25
19	Hard Oil Cups on Main Bearings.....	.38	72	Gasoline Feed Pipe.....	.48
20	Governor Weight.....	.75	73	Drive Pulley.....	3.28
21	Contact Spring.....	.38	74	Starting Crank.....	.55
22	Push Rod Steel.....	.38	75	Jump Spark Coll.....	6.10
23	Rocker Arm.....	2.75	76	Magneto Cable.....	.75
24	Tappet Arm.....	1.00	77	Magneto (high tension).....	30.00
25	Tappet Arm Adjusting Screw.....	1.40	78	Magneto Bracket.....	1.40
26	Governor Weight Supporting Collar.....	1.90	79	Magneto Intermediate Gear.....	3.28
27	Wrist Pin (tool steel).....	.65	80	Magneto Gear (pinion).....	2.25
28	Push Rod.....	1.40	A-81	Tappet Arm Supporter.....	1.03
29	Cylinder Oil Pipe.....	.28	A-82	Gasoline Feed Pipe.....	.28
30	Trip Arm.....	2.05	A-83	Carburetor.....	.18
31	Intake Valve Spring.....	.38	A-84	Carburetor Nipple.....	.18
32	Exhaust Valve Spring.....	.55	A-85	Speed Changing Fork.....	.28
33	Intake Valve.....	1.40	86	Spark Plug Wrench.....	.28
34	Exhaust Valve.....	1.40	87	Battery Switch.....	1.40
35	Glb Head Key for Balance Wheel.....	.48	88	Spark Plug.....	1.00
36	Nipple Connecting Check Valve and Tank.....	.13	89	Air Adjusting Valve Lid.....	.28
37	Nipple Connecting Mixer to Cylinder.....	.28	90	Screw for Air Adjusting Valve.....	.10
38	Cap for Filler Pipe on Gas Tank.....	.15	91	Coil Spring for Air Adjusting Valve.....	.15
39	Street Ell on Gas Tank Filler Pipe.....	.28	92	Elbow for Air Adjusting Valve.....	.18
40	Nipple on Gasoline Tank.....	.28	93	Air Adjusting Valve.....	.48
41	Nipple and Ell on Gasoline Tank.....	.48	94	Roller on Speed Changing Fork.....	.28
42	Rocker Supporting Stud.....	.28	95	Roller Pin for Speed Changing Fork.....	.28
43	Cam Gear Supporting Stud.....	1.40	96	Priming Pump.....	.28
44	Governor Spring.....	.38	97	Hand Wheel for Speed Changing Device.....	.28
45	Governor Spring Tension Bolt.....	.10	98	Spring for Speed Changing Device.....	.28
46	Tappet Arm Supporting Stud.....	.28	99	Stud for Speed Changing Device.....	.28
47	Lock Nut on Tappet Arm Supporting Stud.....	.28	100	Speed Changing Lever Supporting Screw.....	.28
48	Cylinder Head Stud Bolt (short).....	.28	101	Elbow and Nipple for Priming Pump.....	.23
49	Cylinder Head Stud Bolt (long).....	.28	102	Intermediate Gear Supporting Pin.....	.23
50	Nut on Cylinder Head Stud.....	.28	103	Tappet Arm Supporting Pin.....	.28
51	Cap Screws for Bolting Cylinder to Base.....	.15	104	Speed Lever Supporting Stud.....	.75
52	Set Screws for Wrist Pin.....	.15	105	Name Plate.....	.75
53	Cap Screws for Bolting on Oil Guard.....	.10	106	Lubricator.....	.85

THE CARPENTER POWER DRIVEN CENTRIFUGAL PUMP



Where a greater lift of water is required over that of the bilge trench pump, this Centrifugal power driven outfit will fill the demand. The conditions under which Centrifugal Pumps are used vary considerably. We are giving but one view here, a 2½ inch Suction Pump, chain driven, in connection with a Carpenter four horse-power, four cycle water hopper cooled gasoline engine.

The chain sprockets on this outfit are made of high grade steel forgings accurately machined all over. The teeth are machine cut, insuring an exact fit to the chain. The chain is a hardened steel roller chain of the same type as extensively used for automobile and truck drives. It is of ample strength to withstand the severe duty these outfits are subjected to.

The four horse-power Carpenter Engine and Pump are connected by chain which is enclosed in a guard, all mounted complete on a strong channel iron truck.

The chain drive is giving good satisfaction, and this outfit can be absolutely relied on, as it is very substantially built of the best material and workmanship.

To give correct recommendations regarding an outfit best adapted to the individual requirements, full information as to capacity wanted, nature of fluid to be pumped, total head including suction and discharge, suction lift in feet, etc., must be given.

SPECIFICATIONS OF THE CARPENTER POWER DRIVEN CENTRIFUGAL PUMP

Truck—3 and 4 inch channels.

Wheels—Front 9x3 inches, rear 12x3 inches;
front 14 inches, rear 22 inches.

Engine connected to pump by steel roller chain.

Extreme suction lift—20 feet.

Speed and power must be in proportion to load.

Can also furnish this type of pump good for head up to 125 feet.

To quote on other size outfits we must have total head, suction head, total length of pipe and capacity desired.

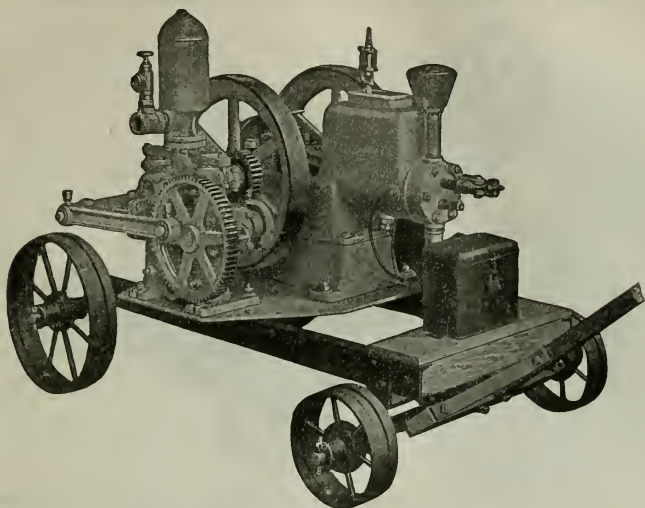
Engine mounted on outfit—Carpenter hopper cooled.

THE CARPENTER POWER DRIVEN CENTRIFUGAL PUMP

Carpenter Power Driven Centrifugal Pump complete on skid, with 2 inch suction, 1½ inch discharge, in connection with Carpenter three horse-power gasoline engine (capacity 3,600 gallons per hour), 40 foot head.....	\$266.66
Outfit complete mounted on steel truck.....	286.66
Carpenter Power Driven Centrifugal Pump complete on skid, with 2½ inch suction, 2 inch discharge, in connection with Carpenter four horse-power gasoline engine (capacity 7,000 gallons per hour), 40 foot head.....	453.33
Outfit complete mounted on steel truck.....	480.00
Carpenter Power Driven Centrifugal Pump complete on skid, with 3 inch suction, 2½ inch discharge, in connection with Carpenter four horse-power gasoline engine (capacity 12,000 gallons per hour), 30 foot head.....	473.33
Outfit complete mounted on steel truck.....	500.00
Carpenter Power Driven Centrifugal Pump complete on skid with 3 inch suction, 2½ inch discharge, in connection with Carpenter six horse-power gasoline engine (capacity 12,000 gallons per hour), 50 foot head.....	435.00
Outfit complete mounted on steel truck.....	606.66
Carpenter Power Driven Centrifugal Pump complete on skid, with 4 inch suction, 3 inch discharge, in connection with Carpenter six horse-power gasoline engine (capacity 15,000 gallons per hour), 30 foot head.....	620.00
Outfit complete mounted on steel truck.....	646.66
Complete housing for outfit.....	46.67
Low-tension friction driven magneto in connection with dry cells and coil.....	40.00
High-tension gear driven "Dixie" magneto (no dry cells or coil).....	37.33
Hose or pipe furnished in any length. See index.	

FOR SUCTION HOSE, SEE INDEX

CARPENTER PORTABLE PISTON PUMP



Water bound macadam roads, concrete roads, in fact all roads when newly made require a great deal of water in their construction, in company road building the water supply for both mixer and watering down the road, has been a problem to the contractor, and with the large building of roads, a portable pump to supply water fills this demand.

The Carpenter Power Driven Piston Force Pump as illustrated here, has done good service on roads being built throughout the country, pumping to a distance as far as two and half to three miles. It is an outfit also suitable for small pumping stations, railway supply systems, small irrigation plants, country homes, etc.

This Outfit will Pump to a Head of 200 feet or its Equivalent pressure of 85 pounds.

Specifications of the Carpenter Power Driven Piston Force Pump

Truck—4 inch channels.

Wheels—front 14x4 inches, rear 22x4 inches.

Engine direct geared to pump.

CAPACITY—

No. 00 Outfit—900 gallons per hour, 1½ inch suction and discharge.

No. 0 Outfit—1500 gallons per hour, 2 inch suction and discharge.

No. 1 Outfit—900 gallons per hour, 1½ inch suction and discharge.

No. 2 Outfit—1500 gallons per hour, 2 inch suction and discharge.

No. 4 Outfit—3600 gallons per hour, 3 inch suction and discharge.

Extreme Suction Lift—20 feet.

Total Lift—(suction and discharge) 150 feet on No. 00-0 Outfits, 200 feet or equivalent pressure on No. 1, 2, 3 and 4 Outfits.

We can also furnish this type of pump up to capacity of 7000 gallons per hour.

Overall Length of Outfit—6 feet.

Overall Width of Outfit—3 feet, 4 inches.

THE CARPENTER POWER DRIVEN PISTON FORCE PUMP

Carpenter No. 00 Power Piston Pump complete on skid, with 3 inch by 5 inch double acting Piston Pump, 1½ inch suction, 1½ inch discharge Fitted with RELIEF VALVE, mounted in connection with Carpenter three horse power gasoline engine (capacity 15 gallons per minute)..... \$ 273.33

Carpenter No. 00 Power Piston Pump complete, mounted on steel truck..... 293.33

Carpenter No. 0 Power Piston Pump complete on skid, with 4 inch by 5 inch double acting Piston Pump, 2 inch suction, 2 inch discharge, Fitted with RELIEF VALVE, mounted in connection with three horsepower gasoline engine (capacity 25 gallons per minute)..... 293.33

Carpenter No. 0 Power Piston Pump complete, mounted on steel truck..... 313.33

Carpenter No. 1 Power Piston Pump complete on skid, with 3 inch by 5 inch double acting Piston Pump, 1½ inch suction, 1½ inch discharge, Fitted with RELIEF VALVE, mounted in connection with four horsepower gasoline engine (capacity 15 gallons per minute)..... 420.00

Carpenter No. 1 Power Piston Pump complete, mounted on steel truck..... 440.00

Carpenter No. 2 Power Piston Pump complete on skid, with 4 inch by 5 inch double acting Piston Pump, 2 inch suction, 2 inch discharge, Fitted with RELIEF VALVE, mounted in

connection with Carpenter four horsepower gasoline engine (capacity 25 gallons per minute)..... \$446.66

Carpenter No. 2 Power Piston Pump complete, mounted on steel truck..... 473.33

Carpenter No. 3 Power Piston Pump complete on skid, with 5 inch by 5 inch double acting Piston Pump, 2½ inch suction, 2½ inch discharge, Fitted with RELIEF VALVE, mounted in connection with Carpenter four horsepower gasoline engine (capacity 35 gallons per minute)..... 480.00

Carpenter No. 3 Power Piston Pump complete, mounted on steel truck..... 500.00

Carpenter No. 4 Power Piston Pump complete on skid, with 6 inch by 6 inch double acting Piston Pump, 3 inch suction, 3 inch discharge, Fitted with RELIEF VALVE, mounted in connection with Carpenter four horsepower gasoline engine (capacity 60 gallons per minute)..... 513.33

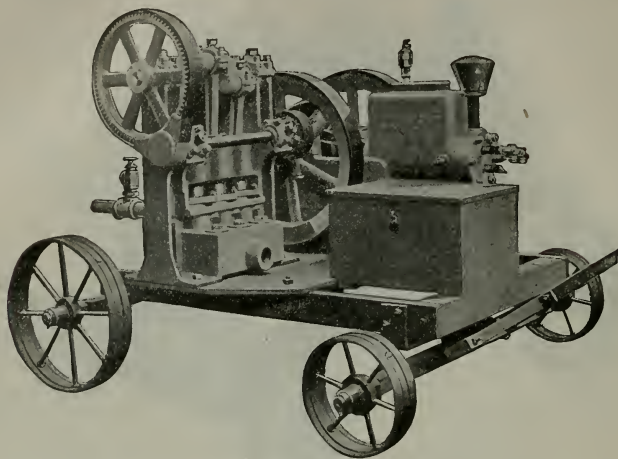
Carpenter No. 4 Power Piston Pump complete, mounted on steel truck..... 533.33

Carpenter complete housing for outfit..... 63.33

Low-Tension friction drive magneto in connection with dry cells and coll..... 40.00

High-Tension gear-driven "Dixie" magneto (no dry cells or coll)..... 37.33

CARPENTER PORTABLE TRIPLEX PUMP



Concrete roads and water bound macadam roads now so extensively being built, require a great deal of water in their construction. The water supply is often quite a distance from where it is needed, and to get it to this point at all times, both for the mixer and for sprinkling the new laid road, requires a dependable and efficient pump.

To meet the demand for a pump that is good for a higher pressure and capable of delivering water over a longer distance, and to a higher elevation than our Piston Force Pumps, we have this Single Acting Triplex Plunger Pump.

The bearings, connecting rods, valves and glands are all accessible for occasional inspection and adjustment. These pumps being direct geared to our hopper cooled gasoline engines make the constant attendance of an operator unnecessary. The gears are all machine cut and of ample size to stand the severest strains. A relief valve set at the maximum working pressure of this pump is furnished with each outfit, making it impossible to wreck the pump in case the water becomes obstructed at any point in the pipe line.

In writing for further information on these outfits be sure and give us the distance the pump is to be placed from the water, the number of feet the water is to be elevated both in the suction and discharge line, the amount of water required per hour and the size and length of pipe to be pumped through.

SPECIFICATIONS OF THE CARPENTER POWER DRIVEN TRIPLEX PUMP

Truck—4 inch channels.
Wheels—Front 14x4 inches, rear 22x4 inches.
Engine—Direct geared to pump.
Pump Crank Shaft—High grade steel.
Valves—Rubber disc type, easily accessible.
Cylinders and Plungers—Close grained grey iron.

Gears—Accurately machine cut.
Base Plate—Steel reinforced with steel tee.
Relief Valve—Set at maximum working pressure of pump, furnished with each outfit.
Extreme Suction Lift—20 feet.
Engine Mounted on Outfit—Carpenter hopper cooled.

THE CARPENTER POWER DRIVEN TRIPLEX PUMP

Carpenter No. 1 Power Driven Triplex Pump complete on skid, with 3 inch by 4 inch single acting Triplex Pump, 1½ inch suction, 1½ inch discharge, FITTED WITH RELIEF VALVE, mounted in connection with Carpenter four horsepower gasoline engine (capacity 1500 gallons per hour—total head 350 feet or maximum pressure of 150 pounds)..... \$546.66
Outfit complete, mounted on steel truck..... 573.33
Carpenter No. 2 Power Driven Triplex Pump complete on skid, with 3 inch by 4 inch single acting Triplex Pump, 1½ inch suction, 1½ inch discharge, FITTED WITH RELIEF VALVE, mounted in connection with Carpenter four horsepower gasoline engine (capacity 1500 gallons per hour—total head 460 feet or maximum pressure of 200 pounds)..... 620.00

Outfit complete, mounted on steel truck..... \$646.66
Carpenter No. 3 Power Driven Triplex Pump complete on skid, with 3½ inch by 4 inch single acting Triplex Pump, 2 inch suction, 2 inch discharge, FITTED WITH RELIEF VALVE, mounted in connection with Carpenter six horsepower gasoline engine (capacity 2400 gallons per hour—total head 460 feet or maximum pressure of 200 pounds)..... 813.33
Outfit complete, mounted on steel truck..... 840.00
Complete housing for outfit..... 53.33
Low Tension Friction Driven Magneto in connection with dry cells and coil..... 40.00
High Tension Gear Driven "Dixie" Magneto (no dry cells or coil)..... 37.33

THE EVINRUDE UNIT CENTRIFUGAL PUMP

The ever increasing popularity of the Evinrude Motor makes it unnecessary for us to enter into a lengthy description of it. Since its first appearance on the market, its record for efficiency, durability and service has put it well to the front in the ranks of motors.

The manufacturers of the Evinrude have combined the motor with an unusually high grade centrifugal pump.

The pump proper consists only of a rotating impeller mounted within a casing. To the casing is bolted the bracket or mounting, for the gasoline motor, which furnishes the power. This is coupled up by direct drive, so that not an ounce of power is lost.

The ignition is built into the flywheel in the form of the Evinrude Magneto—Flywheel Type. Being entirely insulated and protected, the magneto cannot be damaged or put out of commission by dampness or even a drenching rain. Your power plant is absolutely dependable.

The pump is set right down into the excavation and submerged in the water. No suction pipe is required—there is no need of priming. Start the motor, with a half-turn of the flywheel, and the pump starts the water through the discharge pipe. With the outlet of 1½ inches, and the large, open, unobstructed passages, the pump will deliver large quantities—average capacity of 2,400 gallons per hour against a 25 foot head, in the 2 H. P. size—of even semi-fluids, or water containing gritty or solid matter, without choking or causing undue wear. Only 17½ inch by 24 inch floor space required. The light weight, 133 lbs., permits of easy handling by two men.

The parts are few and there is nothing complicated or difficult to get at. Starting is easy and the operation simple. Any man on the job can handle the Evinrude. An engineer's knowledge is not required—and a good saving can be effected right there. In the 2 H. P. size, the gasoline tank holds one gallon—sufficient for four hours running—remarkably low fuel cost. The lubricating oil is mixed right with the gasoline—no oil cups to watch or worry about. You can leave the pump without attention for hours at a time and on your return you will find it plugging along faithfully and steadily.

By the addition of the rowboat bracket and propeller sleeve, the motor proper can be used for driving a rowboat, skiff, work-boat or scow. Or, by removing the propeller and substituting a flanged pulley, you can belt up to a grindstone or saw.

WEIGHTS

2 H. P. net 133 pounds. Crated for shipment, 169 pounds.
3½ H. P. net 167 pounds. Crated for shipment, 212 pounds.

LIST PRICES

2 H. P. Rowboat Motor complete, with Centrifugal Pump complete	\$110.00
minus propeller sleeve, bracket, etc.	90.00
2 H. P. Rowboat Motor, complete	90.00
Centrifugal Pump complete, for 2 H. P. Motor	30.00

NOTE—Any model of Evinrude can be attached to the pump, but the lower priced ones are as efficient as any for the work.

3½ H. P. Rowboat Motor complete, with Centrifugal Pump, complete	\$150.00
Centrifugal Pump complete, with 3½ H. P. Motor, minus propeller sleeve, bracket, etc.	115.00
3½ H. P. Rowboat Motor complete	125.00
Centrifugal Pump complete for 3½ H. P. Motor	45.00

the pump, but the lower priced ones are as efficient as any

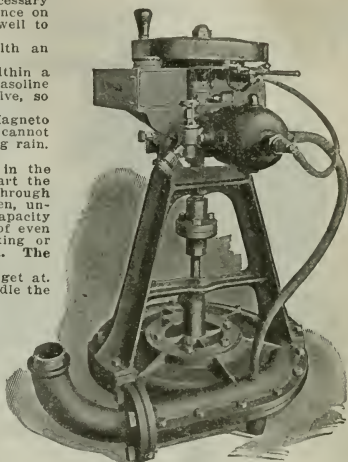


Fig. S51. Evinrude Unit

POWER ROTARY FORCE PUMP ON FRAME

Arranged with Tight and Loose Pulleys

Fig. 120 represents our Power Rotary Force Pump on cast iron frame and arranged with tight and loose pulleys.

The Cams or gears are milled on both sides and faced and key-seated to shafts.

The Case is bored true to gauge to accommodate the cams with just enough clearance to produce highest efficiency.

The Shafts are of ground cold rolled steel, centered and straightened. No. 1, 2 and 3 are 1 1/16 inch diameter. No. 4 and 5 are 1½ inch diameter.

The Stuffing Box is of latest design and will not leak.

As shown in cut, the pulleys are supported by very strong bearings with babbitt lined boxes, the shaft extending out a sufficient length beyond the bearings to admit the use of a balance wheel, but this wheel is only furnished when ordered.

This pump can be used in all places where a large quantity of water or liquids of any kind are required; is constructed to operate against a pressure of from ten to fifty pounds to the square inch, discharging a steady stream of water.

Will draw water 15 feet and force to an elevation of 100 feet.



Fig. 120

SIZES AND LIST PRICES

No.	Suction Fitted for Pipe, inches	Discharge Fitted for Pipe, inches	Size Pulleys inches	Weight pounds	At 100 R. P. M. gallons	Iron	Bronze Case and Cams	Bronze*
1	1¼	1	10x3	73	13	\$27.00	\$49.00	\$60.00
2	1¼	1	10x3	80	14	32.00	56.00	65.00
3	1¼	1	10x3	87	17	38.00	68.00	75.00
4	1½	1½	12x3½	142	27	48.00	78.00	100.00
5	2	2	12x3½	146	36	54.00	90.00	120.00

*Bronze pumps have all parts common in contact with liquid of bronze.

Ratio of Speed from 100 to 200 Revolutions per Minute.

CENTRIFUGAL PUMPS

HORIZONTAL SIDE SUCTION

Direct Connected to Vertical Gasoline Engine

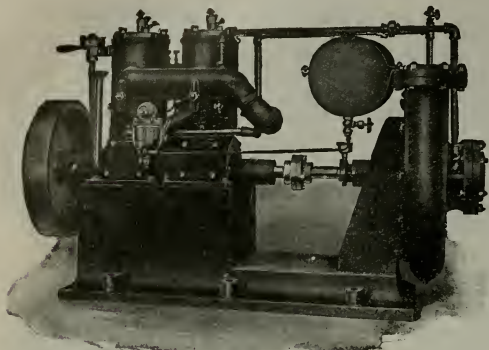


Fig. 1231A

This is our Centrifugal Water Pump directly connected to a high speed gasoline engine. The combined pump and engine are mounted on a substantial cast iron base together with a suitable gasoline tank. Provision is made for circulating the cooling water through the engine directly from the centrifugal pump, thus making a very compact and portable outfit.

As the speed of these engines can be instantly changed while running, they offer a wide range of capacities and elevations, making them useful for contractors, and others in pumping out trenches, excavation for foundations, etc., where a portable outfit that can be quickly put in service is required.

A suction hose and foot valve can be used and the pump primed by pouring full of water, or a primer can be provided on the suction and the pump primed by hand.

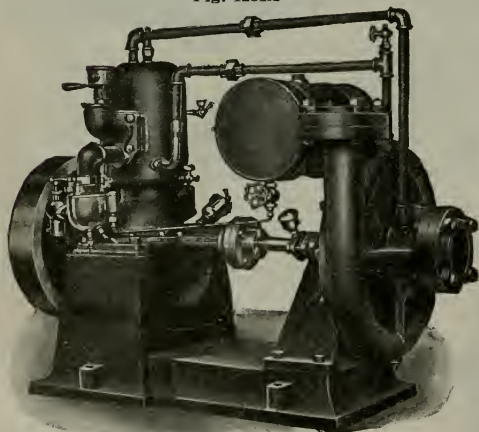


Fig. 1231B

No. Pump	Size of Pipe		Approximate Capacity and Total Head	Size Engine		Price
	Discharge inches	Suction inches		H. P.	Number Cylinders	
2	3	3	100 gal. 25 ft. to 200 gal. 10 ft.	3½	1	\$285.00
3	3½	4	150 " 50 " " 400 " 10 "	7	2	375.00
4	4	4	200 " 60 " " 600 " 10 "	12	2	465.00
5	5	5	300 " 60 " " 900 " 10 "	18	3	645.00

Price covers outfit complete as shown in illustration, including gasoline tank mounted on pump, carburetor, timer and spark plugs.

A spark coil with suitable dry battery cells, switch and battery wires is also supplied. For table of Speed of Pumps, see index.

CHALLENGE DOUBLE-ACTING FORCE PUMPS

All "Challenge" Pumps have brass-cased piston rods, brass valves and seats, and as Cylinders are either brass lined or brass working parts are unaffected by acid or salt water. Large air chamber.



Fig. 2. Single Lever

No.	Diam. Cylinders inches	Suction inches	Discharge inches	Single Lever Brass Lined	Double Lever Brass Lined
2	2 1/2	1 1/4	...	\$27.00	....
4	3	1 1/4	...	28.00	....
8	4	1 1/2	1 1/4	30.00	\$35.00
12	5	2	1 1/2	40.00	45.00
16	6	2 1/2	2	50.00	55.00

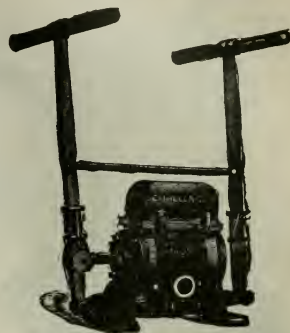


Fig. 8. Double Lever

PEARSON DOUBLE-ACTING FORCE PUMPS

An efficient pump for general use. Valves are easy of access, by unscrewing the bolts and lifting off the air chamber. Mounted on plank; is fitted for either iron pipe or hose, as desired.

BRASS LINED

No.	Size Cylinders inches	Suction inches	Discharge inches	Stroke inches	Price Each
275	3	1 1/2	1 1/4	5 1/4	\$27.00
276	5	2 1/2	2	6	45.00



Fig. 275, Single Lever

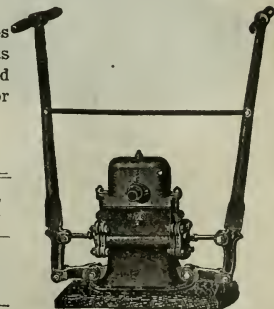


Fig. 276, Double Lever

COMBINATION BOILER TEST AND HAND FEED PUMPS

BRASS FITTED

This is a double-acting pump of special design and construction, capable of being worked by one man against 500 pounds pressure. It has brass piston (packed), brass piston rod, and forged steel connections.

Length of stroke, 5 inches. Suction for 1 inch pipe.

Discharge for 3/4 inch pipe. Weight, including base plate, 60 pounds.

The illustration shows base for fastening down, but where the pump is intended for general purposes and to be moved from place to place (for inspectors or boiler-shop testing, etc.), we can substitute a long base on which the operator may stand. Price the same for either style, but unless otherwise instructed we will consider that the square base as illustrated is wanted.

Repacking or cleaning is conveniently done by simply unbolting and lifting the pump off from its base.

Price each.....\$25.00



Fig. 0

DIAPHRAGM PUMPS

THE CARPENTER NEW DIAPHRAGM SUCTION PUMPS

For Suction Lift 25 Feet



Fig. 1223

Carpenter Diaphragm Pumps are made for handling large quantities of muddy and gritty water, sewage or semi-fluids.

They are the simplest type of pump made: two valves and a strong rubber diaphragm—which creates suction by an up-and-down motion—constitute the pumping mechanism proper. There are no complicated parts to get out of order and no sliding contacts to become worn by gritty materials.

These pumps are unexcelled for rough and ready service such as contractors require in pumping out excavations, trenches, sewers and quarries. Thousands of them are used for this class of work by contractors, railroads and construction companies.

Large numbers of Carpenter Diaphragm Pumps are also used for bilge pumping on vessels, barges and dredges. Their large capacity and rugged construction make them especially suitable for this service. Mines that use the cyanide process employ Carpenter Diaphragm Pumps for handling slimes and other semi-fluids.

No.	Stroke	Suction	Approx. Capacity per Hour	Approximate Weight in lbs.	Price
2	3 in.	2 ½ in. iron pipe	1800 gals.	127	\$19.00
3	3 in.	3 in. iron pipe	4000 gals.	178	24.00
4	4 in.	4 in. iron pipe	6000 gals.	266	35.00

For repair parts see Edson Repair list. The Carpenter and Edson Diaphragm Suction Pump Parts are interchangeable.



EDSON'S DIAPHRAGM FORCE PUMP

ALL GALVANIZED IRON

For Both Side and Bottom Suction

Size Pump	Capacity per Hour gals.	Diameter of Suction inches	Diam. of Discharge inches	Each	
				Side Suction	Bottom Suction
No. 0	1,500	2 ½	2	\$25.00	\$20.00

Fig. 224. Side Suction, for Hose

GENUINE EDSON PATENT DIAPHRAGM FREE PUMP FOR WATER, GRAVEL AND SEWAGE

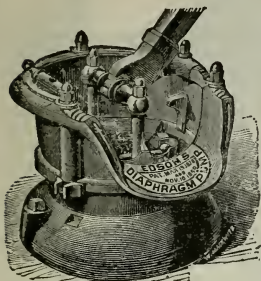


Fig. 225A. Bottom Suction,
for Iron Pipe

Size Pump	Length of Stroke inches	Capacity per Stroke gallons	Diam. of Suction inches	Price Each	
				Side Suction	Bottom Suction
No. 2	2 3/4	1 1/2	2 1/2	\$19.00	\$14.00
No. 3	3 3/4	1	3 1/2	24.00	16.00
No. 4	4	2	4	35.00	25.00

Note Capacity

Capacity operated by one man:

No. 2, 1800 gallons per hour.

No. 3, 4000 gallons per hour.

No. 4, 6000 gallons per hour.

Illustrations show parts of
Side Suction Pump

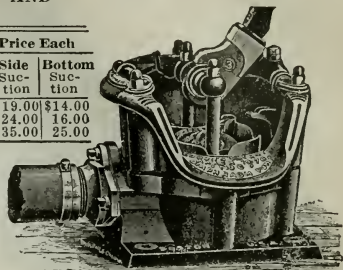
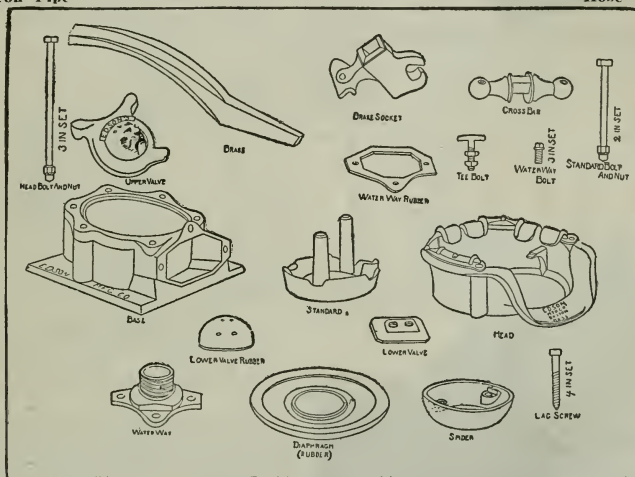


Fig. 225B. Side Suction, for
Hose



Repairs for Edson Diaphragm Pumps	Side Inlet			Repairs for Edson Diaphragm Pumps	Bottom Inlet	
	For No. 2 Pump	For No. 3 Pump	For No. 4 Pump		For No. 3 Pump	For No. 4 Pump
Base	\$11.50	\$14.00	\$22.00	Base	\$11.00	\$21.00
Head	7.00	9.00	15.00	Head	9.00	15.00
Standard	1.80	2.00	3.80	Standard	3.00	3.80
Spider	1.00	1.80	2.00	Spider	1.80	2.00
Brake Socket	1.40	1.40	2.70	Brake Socket	1.40	2.70
Upper Valve	1.30	1.50	2.20	Upper Valve	.60	2.20
Lower Valve	1.50	1.70	2.00	Lower Valve	1.00	2.00
Tee Bolt	1.00	1.00	1.60	Tee Bolt	1.00	1.60
Head Bolt and Nut, 3 in set	.70	.70	.90	Head Bolt and Nut, 3 in set	.70	.90
Brake	4.50	5.00	7.00	Stand. Bolt and Nut, 2 in set	.70	.90
Lag Screw, 4 in set	.20	.30	.30	Brake	5.00	7.00
Stand. Bolt and Nut, 2 in set	.80	.90	1.50	Lag Screw, 4 in set	.80	.30
Lower Valve, Rubber	.70	.70	.90	Cross Bar	.90	1.50
Diaphragm	4.00	5.00	6.50	Upper Valve Rubber	.90	1.70
Waterway	5.50	7.00	10.00	Lower Valve Rubber	.80	1.70
Waterway Bolt, 3 in set	.50	.80	.60	Diaphragm	5.00	6.50
Waterway Rubber	.60	.80	.90	Lower Valve Washer	.20	.50
				Lower Valve Guard	.30	.50
				Upper Valve Bolt, 2 in set	.10	1.00
				Upper Valve Thumb Screw	.70	.70
				Lower Valve Guard Bolt	.70	.70
				Lower Valve Bolt	.50	.70
				Upper Valve Guard	.30	.70

Where more than one
article in set, the price is
for each one.

CENTRIFUGAL PUMPS



Fig. 2301

Horizontal Side Suction Centrifugal Pump

HORIZONTAL

This Pump is designed and constructed throughout on very liberal lines. The case or shell is of the solid type, very heavy, and the runner of large diameter, adapting the pump for slow speed.

The inside of the case is machine finished, and the runner machined and accurately fitted to it; and our construction gives a closer running fit and greater efficiency than can be obtained in the old style split case.

The shaft is large and the bearings are generously proportioned, and ample stuffing box and gland being provided. The discharge can be readily adjusted at any angle. All parts are accurately interchangeable and any part can be readily duplicated.

Brass fitted pumps have runner and shaft of brass.

These Pumps can be fitted with tight and loose pulleys, if desired, at an extra charge.

No. Pump	Gallons Capacity	Size of Pipe		Pulley		Price Iron	Price Brass	Brass Fitted Extra
		Discharge inches	Suction inches	Diameter inches	Face inches			
1	30	1	1½	4	3	\$30.00	\$35.00	\$6.00
1½	70	1½	2	5	5	45.00	75.00	15.00
1¾	90	2	2½	6	5	60.00	100.00	18.00
2	120	2½	3	6	6	75.00	140.00	22.00
2½	185	3	3½	7	6	90.00	165.00	27.00
3	265	3½	4	7	8	110.00	200.00	30.00
3½	360	4	4½	8	8	120.00	230.00	40.00
4	470	4½	5	10	8	130.00	250.00	48.00
5	735	5	6	10	10	165.00	410.00	72.00
6	1,060	6	8	14	12	225.00	600.00	108.00
8	2,000	8	10	20	12	310.00	.....	130.00
10	3,000	10	12	24	12	395.00	.....	265.00
12	4,300	12	15	30	14	500.00	.....	.....
15	7,000	15	18	Special	Special	850.00	.....	.....
18	10,000	18	20	Special	Special	1,300.00	.....	.....

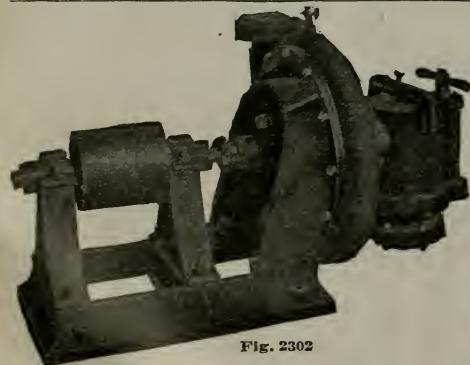


Fig. 2302

HORIZONTAL WITH PRIMER

Same Pump as above with the exception that a hand suction primer is added. At times it is desirable to prime the smaller pumps by hand.

This may be done by opening the air cock at the top of the shell and then using the hand pump on the primer until the water flows from the air cock, when the pump can be started.

On sizes above 8 inch it is advisable to use an ejector and either a foot valve or a flap valve. No foot valve or flap valve is necessary when the hand primer is used.

In this illustration the method of attaching the shell to the hood on the upper pump is clearly shown.

Brass fitted pumps have runner and shaft of brass.

These Pumps can be fitted with tight and loose pulleys, if desired, at an extra charge.

No. Pump	Capacity Gallons	Size of Pipe		Pulley		Price Iron	Price Brass	Brass Fitted Extra
		Discharge inches	Suction inches	Diameter inches	Face inches			
1½	70	1½	2	5	5	\$60.00	\$115.00	\$15.00
1¾	90	2	2½	6	5	75.00	150.00	18.00
2	120	2½	3	6	6	95.00	200.00	22.00
2½	185	3	3½	7	6	110.00	235.00	27.00
3	265	3½	4	7	8	135.00	280.00	30.00
3½	360	4	4½	8	8	145.00	310.00	40.00
4	470	4½	5	10	8	160.00	350.00	48.00
5	735	5	6	10	10	200.00	550.00	72.00
6	1,060	6	8	14	12	270.00	800.00	108.00
8	2,000	8	10	20	12	375.00	.....	130.00

CENTRIFUGAL PUMPS

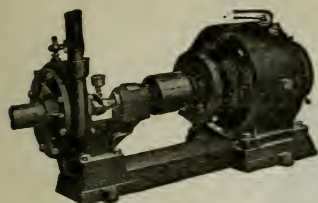


Fig. 1908
Side Suction for Electric Motor Drive
on Cast Iron Base

These Side Suction Centrifugal Pumps are arranged for motor drive and are directly connected to an electric motor. The smaller sizes have both pump and motor mounted on a cast iron bed plate, while the larger sizes have a light steel frame provided instead of a cast iron base.

Flexible couplings connecting the pump and motor shafts can be furnished at an added price when so ordered.

The pump is provided with bracket bearing of the ring oiling type, which is outside of and separate from the stuffing box.

To adapt these pumps to the various motor speeds, special construction is always necessary; therefore inquiries should always state the voltage and kind of current used, amount of liquid to be pumped, and total height to which liquid is to be raised.

Fig. 1906—Sizes, Capacities, Prices, Etc.

No. Pump	Economical Capacity Minute Gallons	Price Iron	Br. Fitted Extra	Price Brass
1	10-30	\$ 70.00	\$ 6.00	\$ 70.00
1 1/2	50-70	80.00	15.00	110.00
1 3/4	70-90	110.00	18.00	140.00
2	100-120	140.00	22.00	190.00
2 1/4	150-185	160.00	27.00	220.00
3	225-265	180.00	30.00	260.00
3 1/2	300-360	190.00	40.00	290.00
4	400-470	210.00	48.00	315.00
5	600-735	250.00	72.00	500.00
6	900-1060	320.00	108.00	.....
8	1800-2000	410.00	130.00	.....

Prices are for pump complete with frame to receive motor, but do not include motor.

FOR MOTORS, SEE INDEX

CENTRIFUGAL BILGE PUMPS

The illustration to the right shows our Electric Centrifugal Bilge Pump for pumping sewerage, draining basements, etc. It is entirely automatic in its action and, as the shell is constantly submerged in the liquid to be pumped, no priming is necessary. The motor is controlled by a float so arranged that the motor starts automatically when the liquid reaches a given height in the pit, stopping when it is empty. In its construction, the pump, discharge pipe, etc., are supported from the pit-cover, so that all parts of the outfit can be removed for inspection or repair by simply lifting this pit-cover.

The pit may be of iron, brick or concrete at will.

We are prepared to furnish outfits of any capacity to suit any conditions. We solicit inquiries, which should state the character and amount of liquid to be pumped, together with the diameter and depth of pit, total height to which the liquid is to be raised, voltage and kind of electric current.

Fig. 1910—Sizes, Capacities, Etc.

- No. 0—Capacity 30-50 gallons per minute.
- No. 1—Capacity 50-100 gallons per minute.
- No. 2—Capacity 125-200 gallons per minute.
- No. 3—Capacity 250-400 gallons per minute.

Price quoted will cover outfit complete, as shown in illustration, for intermittent service, but does not include pit.

Regular construction is for a pit 5 feet in depth, and 36-inch inside diameter for sizes No. 0, 1 and 2; and 40-inch inside diameter for size No. 3.

Pumps arranged for pits more than five feet in depth will be charged extra.

Prices on special steel and cast iron pits on application.

Prices Quoted on Request

In forwarding specifications for quotations, be sure to mention vertical lift in feet wanted, as well as type of motor, number of gallons per minute to be handled.

FOR PIPE AND FITTINGS, SEE INDEX

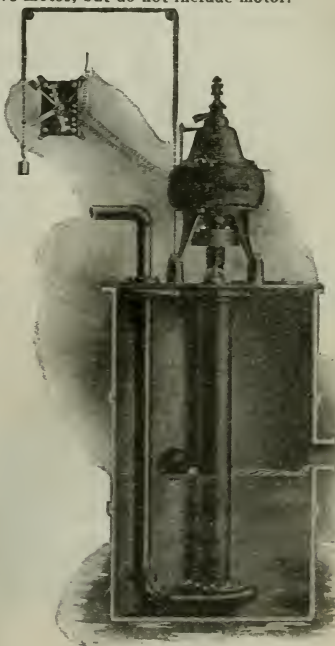
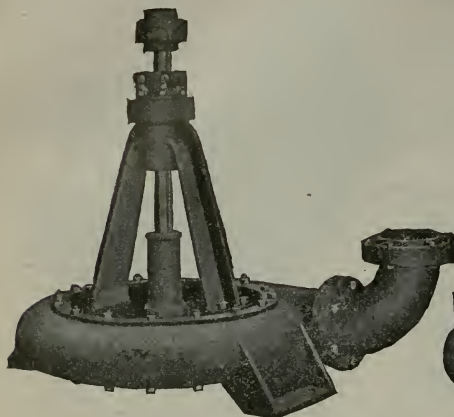


Fig. 1910
Centrifugal Bilge Pump in Pit

CENTRIFUGAL PUMPS

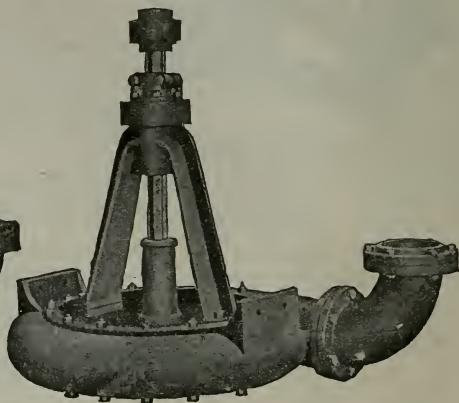
VERTICAL



Vertical Submerged Centrifugal Pump with Feet

This pump is intended to be entirely submerged in the liquid to be pumped and needs no priming. The weight of shaft is entirely supported by the yoke, which has a bearing with adjustment at the top, making a very durable pump, there being no step bearing inside the shell to cut and wear. By simple removing the nuts at the top of the shell, all of the running parts, including the runner, can be lifted out for inspection.

We can supply both these pumps with the discharge elbows increased to the next pipe size at the price of regular pump, when so ordered.



Vertical Submerged Centrifugal Pump With Timber Pieces

This pump is arranged with timber castings for bolting to vertical timbers. In irrigation work, where the pumps are usually placed in a pit at a considerable depth, vertical timbers to support the pump shell are usually used.

Contractors frequently use this arrangement in excavations and lower the pump and timber frame in the trench as added depth is required.

No. Pump	Capacity Gallons	Size Discharge Pipe Inches	Pulley		Coupling Bored for Inch Shaft	Price Iron	Price Brass
			Diameter Inches	Face Inches			
1	30	1	4	3	$\frac{3}{4}$	\$ 30.00	\$ 35.00
1½	70	1½	5	5	$\frac{7}{8}$	42.00	75.00
1¾	90	2	6	5	1	53.00	100.00
2	120	2	6	6	1½	69.00	140.00
2½	185	2½	7	6	1½	84.00	170.00
3	265	3	7	8	1½	100.00	225.00
3½	360	3½	8	8	1½	109.00	235.00
4	470	4	10	8	1¾	117.00	260.00
5	735	5	10	10	1¾	147.00	420.00
6	1,060	6	14	12	1¾	179.00	580.00
8	2,000	8	20	12	2½	282.00	.....
10	3,000	10	24	12	2½	350.00	.....
12	4,300	12	30	14	2¾	420.00	.....
15	7,000	15	Special	Special	Special	600.00	.....
18	10,000	18	Special	Special	Special	950.00	.....

For Vertical Shaft Bearings, see index.

SAND AND GRAVEL PUMPS

CENTRIFUGAL

DIRECT CONNECTED

This Gravel and Dredging Pump is connected directly to a Vertical Steam Engine. A direct connected outfit is sometimes preferable to a belted outfit on account of portability, compactness, etc., but as the height to which the pump will deliver depends upon its speed, and as the speed of the pump is limited to the speed of the engine, it can be seen that these outfits are not intended for high lifts.

They are usually used against heads of 15 to 20 feet maximum.

The size of engine to be used is governed largely by the steam pressure to be used.



Fig. 331. Direct Connected

No. Pump	Cubic yards of Solids per Hour Per Cent of Solids			Dia. of Solids P'm' will Pass in.	Size of Pipe		Size of Engine		Price
	10%	15%	20%		Disc. in.	Suct. in.	Dia. in.	Strk. inch.	
4	14	21	28	2	4	4	6	6	\$390.00
6	30	45	60	4½	6	6	7	7	510.00
8	60	90	120	6	8	8	9	9	820.00
10	90	135	180	8	10	10	10	10	1050.00
12	125	190	250	10	12	12	12	12	1450.00

Price is for outfit as illustrated, including engine complete with throttle valve, oil cups and cylinder lubricator, together with suction and discharge elbows, flap valve and ejector on pump.

BELT DRIVEN

The pump shell is made in one casting, of the overhung type, and is bolted to the frame in such a manner that it can be easily removed or adjusted to discharge at any angle. A removable disc is fitted to the suction side of the pump which can be readily removed and the piston withdrawn through the opening, without disturbing the pump shell or discharge piping. The frame is made strong and heavy for hard service and the bearings are extra long and ample. The runner is of the enclosed type of large diameter for slow speeds. A special swiveling device allows the suction elbow to be swung to any desired position by simply loosening the nuts.

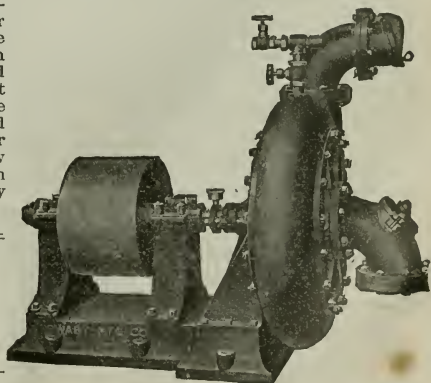


Fig. 332. Belt Driven

No. Pump	Cu. Yds. Solids per Hr. Per Cent Solids		Size Dis. and Suct. Pipe inch	Pulley		H. P. required each 10 ft. of elevation	Diam. of Solids P'm' will Pass, inches	Price
	10%	20%		Dia. in.	Face in.			
4	14	28	4	12	12	4	2	\$210.00
6	30	60	6	18	12	8	4½	300.00
8	60	120	8	24	12	15	6½	475.00
10	90	180	10	30	14	25	8	600.00
12	125	250	12	40	16	30	10	850.00

Prices include suction and discharge elbows, flap valve and ejector.

"NYE" NEW MODEL DOUBLE CYLINDER HIGH PRESSURE STEAM PUMP

THE ALL-AROUND CONTRACTOR'S PUMP

For cofferdam and caisson work, quarries, mines, well-point system, paper mills, tanneries, gas and chemical works, refineries, etc.

This Pump is specially designed and adapted for wells or caissons in deep foundation and mining work. No. 2 Pump requires only a space of 20 inches square for installation. Does not interfere with the placing of lagging, as pump is suspended and a 10 foot suction hose is attached to the bottom of pump, allowing ample room for all other necessary operations below point where pump is placed—a very important feature not found in other pumps of similar make.

Guaranteed to deliver water a height of 150 feet, and is the only pump made which will, without injury to same, handle water containing sand or silt.

The Nye New Model Double Cylinder High Pressure Steam Pump creates a high vacuum and therefore has greater suction lift and will discharge to a greater height with greater rapidity and with less steam than other pumps of similar type. It has no pistons or plungers, no engine with gears or other parts to cause trouble. It is impossible for sand, grit or mud to affect its operation. Will suck air and water without losing its priming. Discharges a full, continuous, steady stream. Cylinders are air cushioned. Has no exhaust. Steam is used twice. Automatically takes care of variation in boiler pressure. Has mushroom type spray basket jets. Patent priming device. High discharge velocity. No reciprocating parts. Simple and compact, takes up least space. Handles

liquids at higher temperatures. Operates at 40 degrees below zero. Shock is eliminated. It will operate equally well suspended or stationary.

The Pump consists of two connected hollow cylinders with discharge chambers at one side, all cast in one piece forming main body of the pump; bottom of these three chambers contains suction and discharge parts. At the top the two cylinders are sealed by steam yoke connection embodying the Nye special spray basket jets. The steam yoke carries two original Nye features, a pair of air valves and a hollow steam valve that floats in its chamber. This valve is extremely simple and sensitive to pressure, vacuum and its own gravity—the operating mediums—and is responsible in a high degree for the steam economy of the Nye Pump. Its function is admission of steam to the filling cylinder in time to aid the air cushion, overcoming shock from ram action of the rising column of water. Following the cushioning function the steam valve admits steam for the discharge. Filling of the alternate cylinder cuts off the supply of steam, permitting expansion of the residual charge, thereby causing discharge from both cylinders simultaneously. The result of this lap of discharge is a sustained momentum. An almost imperceptible increment is the only evidence of the junction of the discharge cycles.

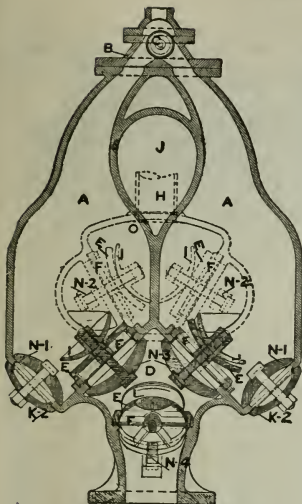
Priming is not required for short suction, but if it is desired to pump air and water at bottom of suction, keeping the water down so that the men can work to good advantage, a small amount of water can be run through the pump continually through angle valve at the back of the pump.

No.	Weight lbs.	Capacity Gals. per Min. Elevations of		Sizes of Pipes, inches			Price Each
		50 ft.	100 ft.	Suction	Discharge	Stm.	
2	550	200	100	3	2	$\frac{3}{4}$	\$225.00
3	900	300	200	4	3	1	300.00
4	1,600	500	400	5	4	1 $\frac{1}{4}$	400.00
5	2,300	800	600	6	5	1 $\frac{1}{2}$	500.00
6	2,800	1,000	800	7	6	2	600.00
7	3,500	2,000	1,500	8	7	2 $\frac{1}{2}$	800.00
8	4,300	3,000	2,000	10	8	3	1,000.00

NYE SPECIAL SAND PUMPS

For handling silica sand, fine coal, etc., up to 50% of solids. Prices quoted upon request. Specify conditions and describe carefully quantity and nature of materials to be handled.

THE PULSOMETER STEAM PUMP



Section through pumping chambers where a pumping outfit is desired which reduces attention to a negligible minimum.

The best answer to these three problems is—the Pulsometer. It has absolutely no mechanically operated parts, the only elements in motion being three check valves, which are enclosed, and operate automatically. It has no packings, glands, springs, or stuffing-boxes, no rubbing surfaces, pistons, gears, or shaft bearings. It consists of one compact unit, can be picked up and set down anywhere,

Although the various types of piston, rotary, and centrifugal pumps adequately meet the ordinary requirements of water, works stations, power plants, industrial plants, etc., they are entirely unsuitable for two great classes of pumping work, viz.,

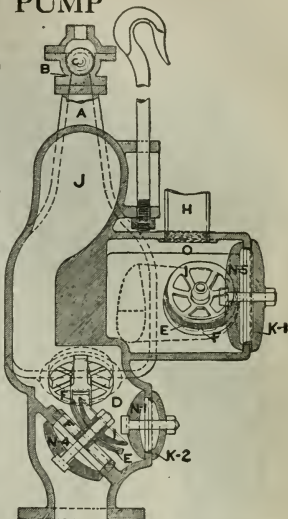
(a) That in which some sort of rough and ready reliable pump is needed—a pump which can be set up and taken down quickly, one which operates practically without attention, and is not subject to interruptions or excessive wear due to gritty or muddy water.

(b) Permanent installations, where the pump must handle thick, viscid or gritty material.

Contractors require a pump of the "A" type where, in draining a trench or excavation, it may be necessary to set up and operate the pump for short periods in different places, making it impracticable to provide a foundation every time the pump is moved. Like conditions exist in mines, where it is often necessary to move the pump to fire a blast and then to return it quickly to the same or a new position, to keep the workings free from water. Quarries, stone yards, brick yards, etc., all have requirements similar to these, and furthermore require a pump which will satisfactorily handle gritty water.

Sewage disposal plants, sewage ejection in buildings, paper mills, breweries, and many other kinds of manufactories, require a pump of the "B" type.

There is also a "C" situation—that in water works, etc., where the water handled is free from sand or grit, but



Section through discharge chamber

and will start off as soon as connections are made and the steam turned on. It needs no special foundation, requiring nothing more than suspension by a chain or rope from an overhead beam or timber.

In permanent installations, it is set up with the greatest ease, and can be moved readily when required (since the only connection is the steam pipe to the boiler), and demands practically no attention.

TYPES OF PULSOMETERS

DESCRIPTION

Standard Improved Pattern

(Note A.) For all general water-raising service, including handling of liquids containing large percentages of thick mud, grit and sediment, the Standard Improved Pattern Pulsometer, with Regulation Flat Rubber Valves, should be used. This is by far the most efficient type for this purpose.

Clapper Valve Pattern

(Note B.) This type is intended for handling large percentages of sand. The Clapper Valve Pump is by far the most efficient type for sand handling purposes.

Ball Valve Pattern

(Note C.) This type is intended for special purposes only, such as pumping Paper Pulp, Slaughter-House Wastes, thick, stringy substances, etc.

Carborundum Lined Pumps

(Note E.) For handling water carrying abrasive material, such as is found in mines, etc. These are not carried in stock.

What We Furnish

Each Pulsometer is furnished complete with our special added Improvement, either Basket or Mushroom Strainer, Steam and Relief Valve Connections and Pump Hook for suspending when necessary. In fact, the above prices include everything necessary to attach to steam and water pipes—ready to run. No piping. See index for piping and fittings.

Numbers, Sizes, Capacities, Dimensions and Weights of the Improved Pulsometer

Sizes of Pipes, inches				Capacities in gallons per minute at different elevations with Boiler Power usually provided (Approximate)				LIST PRICES				Dimensions and Weights			
No.	Steam	Suction	Discharge	25 Feet	50 Feet	75 Feet	100 Feet	Horse Power Required	Flat Valve (Standard) See Note A	Sand Handling Clapper Valves (Special) See Note B	Ball Valve (Special) See Note C	Carborundum Lined (Special) See Note E	Height Inches	Floor Space Inches	Weight lbs.
3	1/4	1 1/2	1 1/2	25	22	18	13	4	\$100	...	\$110	On Application	25	14x13	90
4	1/2	2 1/2	2 1/2	70	60	48	35	5	140	...	150		27	17x14	140
5	3/4	3 1/2	3 1/2	125	105	90	60	6	200	220	215		28	19x19	205
6	1	4 1/2	4 1/2	200	180	140	100	8	240	240	235		30	21x22	430
7	1 1/4	5 1/2	5 1/2	250	215	240	160	12	200	300	330		43	23x24	570
8	1 1/2	6 1/2	6 1/2	450	400	200	190	15	375	375	405		49	25x26	745
9	1 3/4	7 1/2	7 1/2	675	550	350	350	20	750	750	785		61	32x33	1375
10	2	8 1/2	8 1/2	1100	1000	750	500	25	700	700	760		72	38x36	2100
				2200	2000	1600	1100	70	1400	1400	...		88	52x45	3800

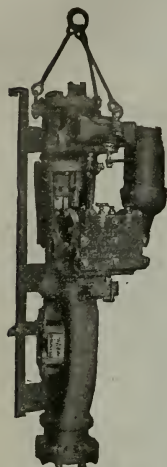
CAMERON SINKING PUMPS

This is the most successful Sinking Pump that has ever been placed on the market. Any steam pump that is to be used in sinking a mine shaft must be strong, certain in operation, capable of handling gritty water, require little attention, and above all, be able to stand the roughest kind of usage without sustaining injury.

This Pump retains all the advantages of the horizontal types of Cameron Pumps besides having several features of importance for a sinking pump. It has no exposed parts liable to breakage; it takes up less room in the shaft than any other make of pump; it cannot be damaged by collision with the side walls; it is not likely to be injured by blasts; and it is designed and intended to handle gritty water.

Capacities, heights in feet and equivalent pounds pressure to which pumps will discharge with steam or air pressure as given at pump.

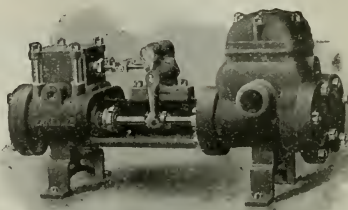
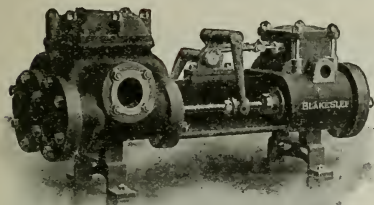
Size No.	With 50 Lbs.			With 60 Lbs.			With 70 Lbs.			With 80 Lbs.		
	Gal.	Ft.	Lbs.	Gal.	Ft.	Lbs.	Gal.	Ft.	Lbs.	Gal.	Ft.	Lbs.
5	50	300	150	50	360	180	50	420	210	....	....	....
6	65	300	150	65	360	180	65	420	210	....	....	....
7	100	300	150	100	360	180	100	420	210	....	....	....
...	80	430	215	75	515	257	65	605	302	65	690	345
8	150	210	105	150	250	125	150	290	145	150	335	167
9a	150	300	150	150	260	180	150	420	210	....	....	....
...	150	400	200	120	480	240	110	570	285	95	650	325
9	200	220	110	200	265	132	200	300	150	200	350	175
9b	200	300	150	200	360	180	200	420	210	....	....	....
...	200	395	197	160	470	235	150	550	275	130	625	312
...	160	495	247	150	595	297	130	695	347	130	790	395
10	260	230	115	260	275	137	260	320	160	260	365	182
11	260	300	150	260	360	180	260	420	210	....	....	....
...	330	235	117	330	285	142	330	330	165	330	380	190
12	330	330	150	330	360	180	330	420	210	....	....	....



Size No.	List Prices			Diameter of Steam Cylinder inches	Diameter of Plunger, inches	Stroke of Piston inches	Displace- ment, Gals. per Minute		Steam Pipe	Exhaust Pipe	Suction Pipe	Discharge Pipe	Space occupied in Shaft inches	Weight
	Iron Water Plunger, Fittings of Composition, Steel Piston Rod, Rubber Valves	Composition Water Plunger, Fittings of Composition, Tobin Bronze Rod, Rubber Valves	Acid Metal Water Plunger, Fittings of Acid Metal, Phosphor Bronze Rod, Rubber Valves				Normal	Maximum						
5	\$ 390.00	\$ 445.00	\$ 480.00	7	3 1/2	12	50	63	1	1 1/2	2 1/2	2	24x24	1441
6	400.00	455.00	490.00	8	4	12	65	81	1	1 1/2	3	2 1/2	25x25	1526
7	545.00	650.00	700.00	10	5	13	100	125	1 1/4	2	4	3	31x30	2308
...	615.00	725.00	780.00	12	5	13	100	125	1 1/2	2 1/2	4	3	32x33	2670
8	570.00	695.00	755.00	10	6	13	125	155	1 1/4	2	4	3 1/2	31x31	2485
9a	615.00	740.00	800.00	12	6	13	125	155	1 1/2	2 1/2	4	3 1/2	32x33	2688
...	800.00	950.00	1030.00	14	6	13	125	155	2	3	4	3 1/2	40x35	3490
9	735.00	895.00	970.00	12	7	13	200	250	1 1/2	2 1/2	5	4	34x33	3424
9b	880.00	1060.00	1160.00	14	7	13	200	250	2	3	5	4	40x35	4023
...	1185.00	1410.00	1525.00	16	7	16	200	250	2 1/2	4	5	4	42x40	5220
...	1300.00	1540.00	1665.00	18	7	16	200	250	3	4	5	4	42x45	5798
10	925.00	1125.00	1225.00	14	8	13	200	250	2	3	5	5	40x38	4214
11	1095.00	1335.00	1465.00	16	8	16	200	250	2 1/2	4	5	5	42x40	4875
...	1220.00	1500.00	1630.00	16	9	16	250	310	2 1/2	4	6	5	42x45	5270
12	1300.00	1585.00	1730.00	18	9	16	250	310	3	4	6	5	42x45	6070

FOR PIPE AND FITTINGS, SEE INDEX

BLAKESLEE DUPLEX STEAM PUMPS



You Run no Risk. They are guaranteed to give satisfaction. If they fail to do so, return to us and get your money. Water Pistons are arranged for square packing—easily and cheaply renewed. Rocker Arms and Shafts are of steel. Frames and Cradles are trough shaped and catch all drip from the stuffing boxes. Water and Steam Cylinders are cast separate so in case of breakage the part can be replaced at small cost. Water Valve Rubbers are of hard or soft rubber as desired. All Pipe Connections larger than 2 inch are flanged. Water Cylinder Linings are brass and are removable. Water Valve Seats, Stems, and Springs are of brass. Stuffing Boxes

will take ample packing to prevent leakage. Water Passages are all direct and valve area is ample for quiet operation when running fast or slow. Water Valve Chamber Cap is held in place by stationary studs and when removed both suction and discharge valves are exposed. Steam Piston Heads are light cored castings and are provided with self-adjusting packing rings. Cross Heads are of the spool type. Steam Chest is cast separate from steam cylinder and held in place by stationary studs. Valve Stems are of cold rolled steel and are provided with bearings inside of steam chest. Valve Stem Stuffing Boxes, Followers and Nuts are of cast bronze.

4 1/2 x 3 x 4 DUPLEX PUMP

This pump will feed up to 150 H. P. boiler. Has 1/2 inch steam pipe, 3/4 inch exhaust pipe, 2 inch suction and 1 1/2 inch discharge. Shipping weight 380 lbs. Floor space 31x14 inches. Maximum capacity 1440 gals. per hour. Water cylinders are brass lined. Shipped complete with drain cocks for steam cylinders, drip plugs for water cylinders, packing wrenches, 2 inch plain lubricator, packed ready to work.

Price \$55.00

4 1/2 x 4 x 4 DUPLEX PUMP

This pump is for filling tanks and forcing water under low pressure and has a maximum capacity of 2640 gals. per hour. With 50 lbs. steam at the pump it will force water up to 75 ft. high. It has 1/2 inch steam pipe, 3/4 inch exhaust pipe, 2 1/2 inch suction and 2 inch discharge. Floor space 37x17 inches. Water cylinders are brass lined. Shipped complete with drain cocks for steam cylinders, drip plugs for water cylinders, packing wrenches, 2 inch plain lubricator, packed ready to work.

Price \$65.00

6 x 4 x 6 DUPLEX PUMP

This pump will feed from 150 H. P. to 450 H. P. Boiler. Has 1 inch steam pipe, 1 1/4 inch exhaust pipe, 3 inch suction and 2 inch discharge. Shipping weight 700 lbs. Maximum capacity 3900 gals. per hour. Floor space 43x17 inches. Water cylinders are brass lined. Shipped complete with drain cocks for steam cylinders, drip plugs for water cylinders, packing wrenches, 2 1/2 inch plain lubricator, packed ready to work.

Price \$75.00

6 x 5 1/2 x 6 DUPLEX PUMP

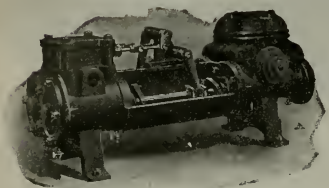
This pump is for filling tanks and forcing water under low pressure and has a capacity of 7200 gals. per hour. With 50 lbs. steam at the pump it will force water 75 ft. high. It has 1 inch steam pipe, 1 1/4 inch discharge pipe, 4 inch suction and 3 inch discharge. Water cylinders are brass lined. Floor space 45x20 inches. Shipped complete with drain cocks for steam cylinders, drip plugs for water cylinders, packing wrenches, 2 1/2 inch plain lubricator, packed ready to work.

Price \$95.00

GARDNER DUPLEX STEAM PUMPS

Packed Piston Pattern

BOILER FEEDERS



No. 1 1/2 Pump



Nos. 2, 3, and 4 Pumps

The sizes listed represent the standard feed pumps for working pressures not exceeding 175 lbs. per square inch. Sizes to No. 4 inclusive, are fitted with inserted brass tube linings, while sizes No. 4A and upwards, have the cast brass removable type. Nos. 2, 3 and 4 can be fitted with this style at slight additional cost.

No.	Diam. of Steam Cylinders	Diam. of Water Cylinders	Length of Stroke	H. P. Boiler will Feed, Based on 30 lbs. Water per Hour, at Stated Number of Strokes		Sizes of Pipe for Short Lengths to be Increased as Length Increases				List Price
				Strokes	Horse Power	Steam Pipe	Ex- haust Pipe	Suction Pipe	Dis- charge Pipe	
0	2 1/2	1 1/2	3	70	30	3/8	1/2	1	3/4	\$50.00
00	3	2	3	60	50	3/8	1/2	1 1/4	1	55.00
1 1/2	4	2 1/2	4	50	80	1/2	3/4	1 1/2	1 1/4	85.00
2	4 1/2	3	4	50	120	1/2	1	2	1 1/2	92.50
3	5 1/4	3 1/2	5	50	210	3/4	1 1/4	2 1/2	2	120.00
4	6	4	6	50	330	1	1 1/2	3	2	140.00
4A	7	4 1/2	6	50	420	1 1/4	1 1/2	4	3	195.00
5	7	4 1/2	10	40	550	1 1/2	2	4	3	260.00
6	8	5	10	40	680	1 1/2	2	5	4	325.00
7	10	6	10	40	975	2	2 1/2	5	4	400.00
7A	10	6	12	40	1,175	2	2 1/2	5	4	440.00
8	12	7	12	40	1,600	2 1/2	3	6	5	575.00

Pumps are furnished both Regular and Brass fitted. Regular fitted Pumps have brass water cylinder linings, iron fibrous packed pistons and steel rods. Brass fitted have in addition to the brass linings, brass pistons, brass or brass lined packing glands on Pump end and Tobin bronze rods.

HAND SUCTION PUMPS

GALVANIZED WROUGHT IRON

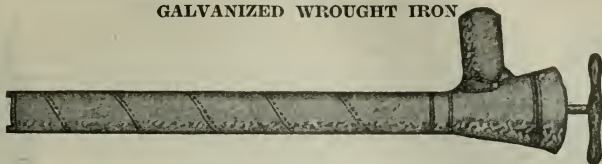


Fig. 226A. Length Measured Over All

Pumps 5 feet in length by 3 inches in diameter and larger, are made of spiral tubing as illustrated with a flared suction end and flared open top, making them more desirable for heavy work than the straight pump. Length is measured over all.

All pumps 3 inches in diameter or less, and shorter than 5 feet, are made of straight tubing and fitted with a cap to keep the water from coming out at the top of the pump. Length under spout.

Length	20 inches Each	24 inches Each	30 inches Each	36 inches Each	48 inches Each	5½ feet and longer, per foot
Diameter 1½ in.	\$2.00	\$2.00	\$2.00	\$2.25	\$2.50	\$0.55
Diameter 2 in.	2.25	2.25	2.25	2.50	2.75	.60
Diameter 2½ in.	2.50	2.50	2.50	2.75	3.00	.65
Diameter 3 in.	....	....	....	....	....	.70
Diameter 3½ in.	....	....	....	....	....	.75
Diameter 4 in.	....	....	....	....	....	.80

Fig. 226C.
Leather PlungerPLUNGERS AND VALVES
FOR GALVANIZED HAND PUMPS

LEATHER PLUNGER

2 inches.....	per doz. \$1.30
2½ inches.....	" 1.65
3 inches.....	" 2.00
3½ inches.....	" 2.40
4 inches.....	" 2.80

SINGLE CLAPPER VALVE

1½ inches.....	per doz. \$1.35
2 inches.....	" 1.60
2½ inches.....	" 2.00
3 inches.....	" 2.25
3½ inches.....	" 3.00
4 inches.....	" 3.50

Fig. 226D.
Single Clapper
Valve

TURRET TANK PUMP

A Good Cheap Iron Pump

All valves on top can be quickly repaired by taking out the bolts in top casting. Suction on top, keeping valves always primed. Combination spout and air chamber can be turned in any direction by loosening the nut. Open and direct waterways for quick and easy work.

A left-hand pump by changing end caps. Suction 2 inch. Discharge 1 inch.

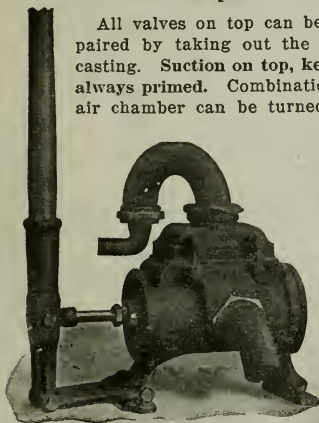


Fig. 227A

Each\$10.00

TRANSFER PUMP

For transferring oils and other liquids from steel barrels. Many devices have been placed upon the market for transferring liquids from one barrel to another receptacle; usually they have been short lived, easily damaged and put out of order. This pump is designed for unlimited service and will last indefinitely. It is substantially built with an all-brass cylinder, 1½-inch diameter, 12 inches long. All brass plunger, brass ball valves and brass seats. To the vertical discharge pipe is attached an adjustable iron plug which screws into the bung of all steel barrels. When screwed into place it is rigidly fastened with set screws.

It is exceptionally well adapted for use as a bilge pump for motor boats, etc. A large amount of water may be bailed out in a short space of time.



Fig. 45

Weight, net, each, 7 pounds.

Price\$4.00

PLUNGER, SIPHON AND BILGE PUMPS

STANDARD PLUNGER POWER PUMPS

The pumps numbered from one to nine are furnished with brass check valves, and the valves can be arranged so as to pass the liquid through the cylinder in either direction as may be desired.

The No. 2A and 3A pumps are same capacity as Nos. 2 and 3, respectively, but are special, being back-gearred for better driving from higher speeds. These sizes are also furnished direct connected to motors.

All sizes to number nine inclusive are vertical single-acting outside packed plunger type.

Standard pumps are adaptable to all kinds of pumping and are especially desirable for this kind of a pump for a continuous service.

As boiler feeders all the Standard Pumps are built for pumping against the ordinary pressure carried on the boilers for which they are rated in the table, and are far more economical than any other kind of pumps.

All these pumps can be run in either direction, and they can be run somewhat faster than given in the table when working against low pressures; but do not run them too fast and try to make any pump do the work of a larger one. Your pump will do better work and last longer when run at a medium speed.

SIZES AND PRICES OF STANDARD PUMPS

No.	Piston inches	Stroke inches	Pipes inches	Pulley	Price	Boiler Power	Weight lbs.	Gallons per Hour
1	1	2	$\frac{3}{8}$	12x2	\$18.00	3	35	18
2	1 $\frac{1}{2}$	2 $\frac{1}{2}$	$\frac{3}{8}$	14x2	20.00	5	45	30
2A	1 $\frac{1}{2}$	2 $\frac{1}{2}$	$\frac{3}{8}$	14x2	32.00	5	55	30
3	1 $\frac{1}{2}$	3	$\frac{1}{2}$	16x3	24.00	10	65	60
3A	1 $\frac{1}{2}$	3	$\frac{1}{2}$	16x2	38.00	10	80	60
4	1 $\frac{1}{2}$	3	$\frac{1}{2}$	16x3	28.00	15	75	90
5	2	3	1	18x4	32.00	30	130	150
6	2 $\frac{1}{2}$	3	1	18x4	38.00	45	170	270
7	2	6	1 $\frac{1}{4}$	22x4	50.00	60	200	360
8	2 $\frac{1}{2}$	6	1 $\frac{1}{4}$	14x4	70.00	80	300	400
9	3	6	1 $\frac{1}{2}$	14x4	85.00	100	400	600
11	4	6	2 $\frac{1}{2}$	18x4	150.00	300	700	1800
12	5 $\frac{1}{2}$	8	2D 2 $\frac{1}{2}$ S	20x5	200.00	500	850	4500

The capacities are rated at fifty strokes per minute. Numbers 1 to 9 inclusive are single acting; numbers 11 and 12 are double acting; numbers 2A and 3A are geared 5 to 1; numbers 8 and 9 are geared 4 to 1; numbers 2A and 3A are geared like 8 and 9; numbers 11 and 12 are geared 6 to 1.

All Standard Pumps are furnished with only one pulley. Furnished with tight and loose pulleys when desired at a slight advance in price.

STEAM SIPHONS

STEAM—The Siphon will work with anything over 7 lbs. pressure. For pressure below 30 lbs. the low pressure siphon should be used, to obtain the best result, but the high pressure can be used with less than 30 lbs.

HEIGHT—The Siphon will raise water above one foot for each pound pressure of steam at the pump. If the fluid is heavier than water, this estimate must be reduced.

CAPACITY—The capacity of each size as given in the price list is based upon 60 lbs. steam pressure at the pump and 15 feet lift. With a greater lift or less steam, these capacities will be reduced.

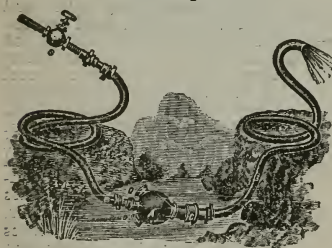


Fig. 420

Fig. 420 PORTABLE RAILWAY OUTFITS (SHOWN AT LEFT)

Complete with hose and fittings for supplying engines with water from any body of water within reach. No. 1 has 1 $\frac{1}{2}$ steam and 1 $\frac{1}{2}$ discharge hose, capacity 120 gallons. No. 2 has 1 $\frac{1}{2}$ steam and 2 $\frac{1}{2}$ discharge hose, capacity 290 gallons per minute with 60 lbs. steam pressure and 15 foot vertical lift.

No. 1 Outfit with 25 feet of Steam and Discharge Hose.....\$110.00

No. 2 Outfit with 25 feet of Steam and Discharge Hose.....145.00



Fig. 473

Fig. 473 BILGE PUMPS

Size of Pump inches	Suction Pipe inches	Discharge Pipe inches	Steam Pipe inches	Capacity per Hour with 50 lbs. Steam gallons	Each
1 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$	$\frac{3}{4}$	2,400	\$10.00
2	2	1 $\frac{1}{2}$	1	3,000	14.00
3	3	2 $\frac{1}{2}$	1	3,600	16.00
4	4	3	1 $\frac{1}{2}$	4,500	20.00
6	6	4	1 $\frac{1}{2}$	8,000	30.00

FOR OTHER STYLES OF SIPHONS AND PUMPS, SEE INDEX

PUMPS

"STAR" ANTI-FREEZING FORCE PUMP

For Wells 30 Feet Deep

This pump is built with revolving top, fitted with air-chamber tube and brass gland. The polished rod connects to the lever with a link. An outlet is provided back of the spout, tapped for iron pipe connection. The stock is tapped for pipe near the spout. Spout is flanged and bolted and furnished with nut and hose tube. Pump as listed is 4 feet long from base to bottom of the cylinder and is suitable for wells about 30 feet deep. If wanted for wells of greater depth, add sufficient pipe and rod between base and cylinder to place the cylinder within 15 feet of the water. We recommend the use of foot valve and strainer with this pump.

No. 852½

No.	Cylinder	Stroke	Cap. per Stroke	Suc. Pipe	Discharges		Lift and Force	Approx. Wgt. in lbs.	Iron Cyl. Price	Brass-Lined Cyl.
					Pipe	Hose				
3	2 ¼ x 10	6	.15	1 ¼	1 ¼	¾	70	79	\$11.85	\$13.85
4	3 x 10	6	.18	1 ¼	1 ¼	¾	60	80	11.85	13.85
6	3 ½ x 10	6	.25	1 ½	1 ¼	¾	50	91	13.10	15.60

"EMPIRE" DOUBLE-ACTING FORCE PUMPS

Lift and Force 75 to 100 Feet

The "Empire" Double-Acting Force Pumps are adapted for shallow or deep wells. The upper cylinder is brass lined and has differential plunger. Stuffing boxes and glands are dispensed with, thus avoiding undue friction. The pump is furnished complete with brass lined or brass body lower cylinder, with "Universal" bronze valve and seat, and "Universal" bushing. No. 2 pump will go inside of 4 ¼-inch well casing; No. 4 pump will go inside of 5-inch well casing. Unless otherwise ordered, we ship these pumps arranged for shallow wells with lower cylinder screwed to the upper cylinder.

The "Universal" bushing, and top cap of the lower cylinder, strainer and hose connection are tied to the pumps. The set length from base of the standard to bottom of the lower cylinder is 65 inches, and adapted for wells 30 feet deep. If required for deeper wells, unscrew the lower cylinder, attach top cap to lower cylinder, place "Universal" bushing in bottom of upper cylinder, and connect the two cylinders with sufficient pipe and rod to place the lower cylinder within 15 feet of the water—preferably submerged. Strainer and hose connection are included in prices.

No.	Lower Cylinder in.	Stroke in.	Cap. per Stroke gal.	Suction Pipe in.	Approx. Wgt. in lbs.	Well Rod, in.	Lift and Force ft.	Brass Lined Cyl. Price	Brass Body Cyl. Price
2	2 ½ x 12	5	.11	1 ¼	98	¾	100	\$18.00	\$19.25
4	3 x 12	5	.15	1 ¼	105	¾	75	18.00	19.25

HAND ROTARY BARREL PUMPS

A very reliable rotary pump for handling fluids of all kinds. Is used very much in the transferring of liquids from original containers to tanks and reservoirs. It is fitted with a device which holds the suction pipe rigidly in the bung hole of a barrel and will fit any size bung hole from 1 ½ to 4 inches in diameter.

No.	Gals. per Min. 100 Rev.	Suction, Inches	Discharge for Hose, Inches	Wt., Lbs.	Bronze, Price	Iron, Price
1	13	1	1	45	\$47.20	\$15.50
2	14	1	1	55	52.00	18.00
3	17	1 ¼	1 ¼	65	60.00	21.00

Price includes 3 feet of suction pipe, hose coupling, hook and patented holder, but no hose. See index for hose.

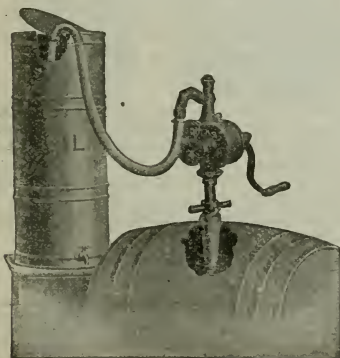
Fig. 852½
"Star"Fig. 1362
"Empire"

Fig. 115

HAND PUMPS

PITCHER SPOUT PUMP

For Suction Lift of 25 Feet

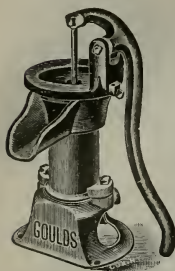
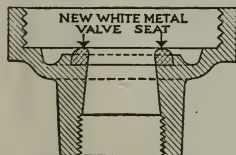


Fig. 205 1/2

Cross-Section of White
Bronze Valve Seat

No. 205 1/2. Standard closed top Pitcher Spout Pump. A low priced, substantial pump for use over cisterns or shallow wells. The bearer top is secured to the cylinder with a set screw. A nut tapped for iron pipe is supplied on the threaded hub beneath the "G" base. If lead pipe is to be used, a soldering tube that fits inside this nut can be furnished at an increase of \$0.15 in the list price. Can also be fitted with brass suction tube and valve seat, and nut threaded for iron pipe (*HIP construction) or with brass suction tube and valve seat with tube for lead pipe (*HLP construction) at extra cost. For "HIP" construction add \$0.50 to the list prices for the Nos. 1, 2 and 3 sizes, \$1.00 for the Nos. 4 and 5 sizes and \$2.00 for the No. 6 size. For the "HLP" construction add \$0.75 to list prices for the Nos. 1, 2 and 3 sizes, \$1.50 for the Nos. 4 and 5, and \$3.00 for the No. 6.

Fig. 1018
Star

No.	Diam. Cyl. inches	Stroke inches	Capacity per Stroke gallons	Suction in Pipe	App'x wt. in lbs.	Iron Price	Brass Lined Price
1	2 1/2	4	.09	1	22	\$2.10	\$4.00
2	3	4	.12	1 1/4	23	2.35	4.50
3	3 1/2	4	.17	1 1/4	26	2.60	5.00
4	4	4	.22	1 1/2	30	3.10	5.65
5	4 1/2	5	.34	2	42	4.75	7.80
6	5	5	.43	2 1/2	61	8.50	14.00

"STAR" ANTI-FREEZING LIFT PUMP

For Wells 30 Feet Deep

No. 1018. A medium-priced Well Lift Pump for outdoor cisterns and wells, either dug or drilled. The lever and rod are connected with a cross-head and bolt. Standard is tapped for iron pipe, and pump as listed is 4 feet long from base to bottom of cylinder. Pump is adapted for wells about 30 feet deep. If a pump is wanted for wells of a greater depth, add sufficient pipe and rod between base and cylinder to place the cylinder within 15 feet of the water. We recommend the use of a foot valve and strainer with this pump. The cylinder furnished with this pump has the lower attachment fitted with a raised white bronze valve seat. Illustrated above.

No.	Cylinder inches	Stroke inches	Capacity per Stroke gallons	Suction Pipe inches	Approx. Weight in lbs.	Iron Cylinder Price	Brass Lined Cylinder Price
4	3x10	6	.18	1 1/4	60	\$6.85	\$8.85

HAND ROTARY FORCE PUMP

With Pedestal Base

Will draw water or similar liquids 15 feet, and force to an elevation of 75 feet. By removing the cap on upper discharge, and placing it at end of spout discharge, pipe can be connected for elevating water. Fly wheel is 14 1/2 inches in diameter. Pedestal elevates pump to convenient operating position. Pump can be operated at the rate of 75 revolutions per minute by the average man.



Fig. 118. Rotary

Size No.	Capacity Gals. per Minute	Suction inches	Discharge inches	Diameter Balance Wheel	Weight lbs.	Price, Iron Pump
1	13	1 1/4	1	14 1/2	68	\$15.50
2	14	1 1/4	1	14 1/2	75	17.50
3	17	1 1/2	1 1/4	14 1/2	85	23.00

FOR PIPE AND HOSE, SEE INDEX

TRENCH BRACES DUNN SAFETY EXTENSIBLE BRACES

Considering the high price of lumber and quantity lost or destroyed on every job, our Braces are far cheaper, as well as safer, than the old style wooden struts, which are difficult to wedge in position, and always uncertain and dangerous.

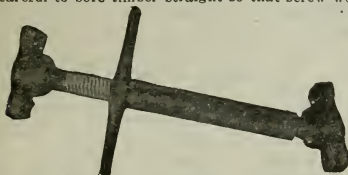
The "Dunn" Brace is light and strong, and is easily adapted to any width of trench by changing the piece of tubing which is standard pipe. The screws have double threads, giving quick travel to the lever nut.

All parts are of the best grade of materials, securely fitted together. Screws are wrought iron, and all other parts refined malleable iron. Each brace is fitted with a ball and socket shoe at each end, so that the brace takes a firm bearing if placed at an angle. Bearing surface of the shoe contains lugs which hold firmly to the planking when the brace is tightened, so that accidental dislodgment is practically impossible.

HOW TO ORDER

Length of braces are listed overall and when closed. Take extreme width of trench, deduct for planking on both sides of trench, (usually about 8 inches) and several inches more for variations in cut, and remainder will give size of brace wanted, the screw being extended to tighten brace in position.

For combination Screw and Timber Brace Fittings, give size of screw and cap wanted. We do not furnish timbers. (Be careful to bore timber straight so that screw won't bind.)



Standard With 1 1/2 Inch Screw and 1 1/2 Inch Pipe

Length Closed Inches	Length of Screw Inches	Weight Per doz. lbs.	List Price Per doz. Complete
16	11	200	\$23.00
18	12	210	23.00
21	14	222	24.00
24	14	234	24.00
27	16	246	26.00
30	16	256	26.00
36	18	280	27.00
42	18	312	28.00
48	18	325	29.00

With 2 Inch Screw and 2 Inch Pipe—Extra Heavy Pattern

36	18	542	\$51.00
42	18	564	52.00
48	18	586	53.00
54	18	608	54.00
60	18	630	55.00

Safety Limit of Extension 6 to 10 Inches According to Length of Brace

Lengths given are overall and when closed. Special sizes made to order.

FITTINGS FOR DUNN COMBINED SCREW AND TIMBER BRACE



Can be used in any width of trench from 2 to 30 feet. It will be found especially valuable in wide and deep trench and foundation work. It can also be used to good advantage in small trench work.

When required we can also furnish caps for the butt end of the brace. Unless otherwise stated in order, all orders will be filled with the single cap.

We Do Not Furnish Timbers

Size of Screw Inches	Size of Cap or Washer Plate Inches	Weight Per doz. lbs.	List Price Per doz. sets	Butt End Caps Per doz.
1 1/2 x 14	4x 4	175	\$18.00	\$ 3.00
1 1/2 x 14	6x 6	192	20.00	4.00
1 1/2 x 18	6x 6	214	22.00	4.00
2 x 18	6x 6	234	23.00	5.00
2 x 18	6x 8	410	40.00	7.00
2 x 18	10x10	450	42.00	10.00
2 x 18	9x12	444	44.00	11.00



"DUNN" BRACE FITTINGS

Shipped Ready for Pipe to be Attached

Cut Pipe 7 Inches Shorter than Length of Complete
Brace Wanted, when Closed

Size of Screw Diameter Inches	Length Inches	Weight Per doz. lbs.	List Price Per doz. Complete
1 1/2	12	185	\$20.00
1 1/2	14	192	21.00
1 1/2	16	204	22.00
1 1/2	18	208	23.00
2	18	440	45.00

We furnish our Braces in this form to parties who wish to put on pipe to suit themselves. Simply the plain pipe is required for the barrel, no machine work being required other than to drill the small hole in one end of pipe to permit of the insertion of cotter pin which holds the brace together. This cotter pin may be removed at any time and longer or shorter pipe substituted, to make the brace suit any width of trench.

Use 1 1/2 Inch Pipe for the 1 1/2 Inch Screws, and 2 Inch for the 2 Inch Screws

REPAIR PARTS



PRICE LIST

	Parts for 1 1/2 Inch Screw Braces	Parts for 2 Inch Screw Braces
(1) Shoes.....	\$2.50	\$6.00
(2) Rings.....	1.00	2.40
(3) Balls.....	1.50	3.60
(6) Lever Nuts.....	4.00	9.60
(4) Screws.....		
Size of screw, 1 1/2 x 12 inches.	List price....	\$10.00
Size of screw, 1 1/2 x 14 inches.	List price....	11.00
Size of screw, 1 1/2 x 16 inches.	List price....	12.00
Size of screw, 1 1/2 x 18 inches.	List price....	13.00
Size of screw, 2 x 18 inches.	List price....	28.00
Socket Butts complete (being Nos. 1, 2 and 2)		5.00
(5) Tubing (according to lengths).		
Standard pipe used.....		See index

WASHER WELL POINTS



Fig. 300

These Well Points are made of wrought pipe galvanized, holes bored and countersunk. Each hole is covered with brass wire gauze, held in place by a brass washer and riveted.

PRICE LIST

Please Order by Trade Number, Stating Mesh of Gauze

Trade Number	Inside Diameter inches	Length of Point inches	Number of Holes	Openings Aggregate Square inches	Price per dozen				
					Number of Gauze				
					60	70	80	90	100
300	1 ¼	20	50	6	\$ 30.00	\$ 36.00	\$ 42.00	\$ 50.00	\$ 64.00
301	1 ¼	24	60	7 ¼	36.00	44.00	52.00	60.00	80.00
302	1 ¼	30	80	9 ½	46.00	55.00	64.00	75.00	100.00
303	1 ¼	36	100	12	56.00	66.00	76.00	90.00	120.00
304	1 ¼	42	120	14 ½	66.00	77.00	88.00	105.00	140.00
305	1 ¼	48	140	17	76.00	88.00	100.00	120.00	160.00
308	1 ¼	24	80	9 ½	42.00	50.00	68.00	68.00	90.00
310	1 ¼	30	100	12	52.00	61.00	70.00	83.00	110.00
320	1 ½	24	80	9 ½	48.00	57.00	65.00	78.00	94.00
321	1 ½	30	110	13 ½	60.00	70.00	80.00	96.00	118.00
322	1 ½	36	130	15 ½	72.00	84.00	95.00	114.00	142.00
323	1 ½	42	150	18	84.00	97.00	110.00	132.00	160.00
323 ½	1 ½	48	170	20 ½	96.00	111.00	125.00	150.00	180.00
324	2	30	140	17	90.00	101.00	112.00	132.00	160.00
325	2	36	170	20 ½	105.00	118.00	130.00	154.00	190.00
326	2	42	200	24	120.00	134.00	148.00	176.00	220.00
327	2	48	230	27 ½	135.00	151.00	166.00	198.00	250.00
328	2	54	260	31 ½	150.00	167.00	184.00	220.00	280.00
329	2	60	290	35	165.00	184.00	202.00	242.00	310.00
330	2	66	320	38 ½	180.00	200.00	220.00	264.00	340.00
331	2	72	350	42	195.00	217.00	238.00	286.00	370.00
332	2 ½	36	225	27	180.00	205.00	230.00	260.00	300.00
333	2 ½	48	325	39	230.00	265.00	300.00	340.00	400.00
334	2 ½	60	425	51	280.00	325.00	370.00	420.00	500.00
335	2 ½	72	525	63	330.00	385.00	440.00	500.00	600.00
335 ½	2 ½	84	625	75	380.00	445.00	510.00	580.00	700.00
337	2 ½	96	725	87	430.00	505.00	580.00	660.00	800.00
338	3	36	250	30	240.00	275.00	310.00	340.00	410.00
339	3	48	360	43	300.00	345.00	390.00	430.00	520.00
342	3	60	470	56	360.00	415.00	470.00	520.00	630.00
346	3	72	580	69	420.00	485.00	550.00	610.00	740.00
348	3	84	690	82	480.00	555.00	630.00	700.00	850.00
350	3	96	800	95	540.00	625.00	710.00	790.00	960.00
370	4	48	440	50	480.00	520.00	560.00	600.00	700.00
374	4	72	660	78	630.00	695.00	760.00	840.00	1000.00
378	4	96	1020	125	780.00	870.00	960.00	1080.00	1300.00
382	4	120	1380	175	930.00	1045.00	1160.00	1320.00	1600.00

GEO. B. CARPENTER & CO.

BRASS JACKET DRIVE WELL POINTS

277

211



Made of Wrought Pipe, Galvanized

These illustrations show a completed well point and a point before gauze and jacket are put on. Brass Jacket points are made of standard wrought pipe. They are punched with elliptical-shaped holes of uniform size, equal distances apart, and contain the largest number of holes permissible, while retaining the strength requisite for driving. The driving plug is a malleable casting, swaged into the pipe and riveted. These points are covered with brass wire cloth, which is protected by a heavy perforated brass-jacket. We can furnish points covered to order with numbers 20, 30, 40 or 50 gauze. Numbers 20 and 30 take the same list as number 70. Numbers 40 and 50 take the same list as number 60. Sizes and lengths not listed will be furnished at proportionate prices. All points when completed are wrapped in paper, and the plugs, in the case of wrought points, are painted to prevent rusting.

Please order by trade number, stating mesh of gauze.

PRICE LIST

Trade Number	Inside Diam-eter inches	Length of Point inches	Length of Jacket inches	Open-ings Ag-gregate square inches	Price per dozen					
					Number of Gauze					
					60	70	80	90	100	120
74	1	24	18	15	\$33.00	\$40.00	\$46.00	\$52.00	\$62.00	\$74.00
76	1	20	24	20	42.00	56.00	64.00	78.00	94.00	114.00
78	1	36	30	25	51.00	49.00	68.00	76.00	94.00	114.00
80	1	42	36	30	60.00	68.00	76.00	88.00	120.00	134.00
82	1	48	42	35	69.00	78.00	86.00	100.00	136.00	154.00
84	1	48	48	40	73.00	84.00	90.00	105.00	142.00	160.00
84½	1	60	54	45	87.00	96.00	106.00	124.00	168.00	194.00
85	1	66	60	50	96.00	105.00	116.00	136.00	184.00	214.00
85½	1	72	66	55	105.00	114.00	126.00	148.00	200.00	234.00
86	1½	20	14	15	30.00	36.00	42.00	50.00	64.00	80.00
90	1½	24	18	20	36.00	44.00	52.00	60.00	80.00	105.00
94	1½	30	24	26½	46.00	55.00	64.00	75.00	100.00	130.00
98	1½	36	30	33	56.00	66.00	76.00	90.00	120.00	155.00
100	1½	42	36	39½	66.00	77.00	88.00	105.00	140.00	180.00
102	1½	48	42	45½	76.00	88.00	100.00	120.00	160.00	205.00
106	1½	54	48	52	86.00	99.00	112.00	135.00	180.00	230.00
110	1½	60	54	58½	96.00	110.00	124.00	150.00	200.00	255.00
112	1½	66	60	65	106.00	121.00	136.00	165.00	220.00	280.00
114	1½	72	66	71½	116.00	132.00	148.00	180.00	240.00	305.00
114½	1½	78	72	78	126.00	143.00	160.00	195.00	260.00	330.00
136	1½	24	18	22½	48.00	57.00	65.00	78.00	94.00	112.00
140	1½	30	24	30	60.00	70.00	80.00	96.00	118.00	139.00
142	1½	36	30	36	72.00	84.00	96.00	114.00	142.00	166.00
146	1½	42	36	45	84.00	97.00	110.00	132.00	166.00	193.00
148	1½	48	42	52½	96.00	111.00	125.00	150.00	188.00	220.00
150	1½	54	48	60	108.00	124.00	140.00	168.00	204.00	247.00
152	1½	60	54	67½	120.00	138.00	155.00	186.00	228.00	274.00
154	1½	66	60	75	132.00	151.00	170.00	204.00	252.00	301.00
156	1½	72	66	82½	144.00	165.00	185.00	222.00	276.00	328.00
160	2	24	18	26	76.00	85.00	94.00	110.00	130.00	150.00
164	2	30	24	35	90.00	101.00	112.00	124.00	140.00	160.00
168	2	36	30	43½	105.00	118.00	130.00	150.00	170.00	190.00
170	2	42	36	52½	120.00	134.00	148.00	176.00	220.00	255.00
172	2	48	42	62	135.00	151.00	166.00	198.00	250.00	290.00
174	2	54	48	70	150.00	167.00	184.00	220.00	280.00	325.00
176	2	60	54	78½	165.00	184.00	200.00	242.00	310.00	360.00
178	2	66	60	87½	180.00	200.00	220.00	264.00	340.00	395.00
180	2	72	66	96	195.00	217.00	238.00	286.00	370.00	430.00
180½	2	78	72	105	210.00	234.00	256.00	308.00	400.00	465.00
182	2	84	78	113	225.00	251.00	274.00	330.00	430.00	500.00
182½	2	90	84	122½	240.00	268.00	292.00	352.00	460.00	535.00
183½	2	96	90	132	255.00	285.00	310.00	374.00	490.00	570.00
183	2½	30	24	40	155.00	175.00	195.00	220.00	250.00	290.00
184	2½	36	30	50	180.00	200.00	220.00	260.00	300.00	350.00
188	2½	48	42	70	230.00	265.00	300.00	340.00	400.00	470.00
192	2½	60	54	90	280.00	325.00	370.00	420.00	500.00	590.00
196	2½	72	66	110	330.00	385.00	440.00	500.00	600.00	710.00
197	2½	84	78	130	380.00	445.00	510.00	580.00	700.00	830.00
199	2½	96	90	150	430.00	505.00	580.00	660.00	800.00	950.00
200	3	36	30	67½	240.00	275.00	310.00	340.00	410.00	490.00
204	3	48	42	94½	300.00	345.00	390.00	430.00	520.00	630.00
208	3	60	54	111½	360.00	415.00	470.00	520.00	630.00	770.00
212	3	72	66	138½	420.00	485.00	550.00	610.00	740.00	910.00
215	3	84	78	165½	480.00	555.00	630.00	700.00	850.00	1,050.00
215	3	96	90	192½	540.00	625.00	710.00	790.00	960.00	1,190.00
202	3½	36	30	70	300.00	345.00	390.00	430.00	520.00	610.00
206	3½	48	42	98	360.00	415.00	470.00	520.00	630.00	750.00
210	3½	60	54	126	420.00	485.00	550.00	610.00	740.00	890.00
213	3½	72	60	140	480.00	555.00	630.00	700.00	850.00	1,030.00
218	3½	84	72	168	555.00	640.00	725.00	805.00	960.00	1,170.00
219	3½	96	84	196	630.00	735.00	820.00	900.00	1,070.00	1,310.00
216	4	48	36	90	480.00	520.00	560.00	600.00	700.00	810.00
220	4	72	60	150	630.00	695.00	760.00	840.00	1,000.00	1,270.00
224	4	84	78	180	720.00	805.00	890.00	980.00	1,160.00	1,410.00
228	4	120	108	270	930.00	1,040.00	1,160.00	1,320.00	1,600.00	2,010.00

FOR WELL POINTING PUMPS AND ENGINES, SEE INDEX

FLUSH OR TUBULAR WELL POINTS



Please order by trade number, stating mesh of gauze.

These Tubular Well Points are made in the same manner as Brass Jacket Drive Well Points. The plug is a solid casting securely riveted to enable point to be driven from the inside.

Trade Number	Inside Diameter inches	Length of Point inches	Length of Jacket inches	Openings Aggregate Square inches	Price per dozen				
					Number of Gauze				
					60	70	80	90	100
73	1	30	18	15	\$34.00	\$40.00	\$45.00	\$50.00	\$55.00
75	1	36	18	15	38.00	44.00	50.00	56.00	66.00
75 1/2	1	36	24	20	43.00	49.00	55.00	62.00	77.00
77	1	42	24	20	47.00	54.00	60.00	68.00	82.00
77 1/2	1	42	30	25	52.00	59.00	65.00	74.00	93.00
79	1	48	30	25	56.00	63.00	70.00	80.00	98.00
79 1/2	1	48	36	30	61.00	68.00	75.00	86.00	109.00
81	1	54	36	30	65.00	73.00	80.00	92.00	114.00
81 1/2	1	54	42	35	70.00	78.00	85.00	98.00	125.00
83	1	60	42	35	74.00	82.00	90.00	104.00	130.00
116	1 1/4	24	18	20	36.00	44.00	52.00	60.00	80.00
117	1 1/4	30	18	20	41.00	49.00	57.00	65.00	85.00
117 1/2	1 1/4	30	24	28	46.00	55.00	64.00	75.00	100.00
118	1 1/4	36	24	28	51.00	60.00	68.00	80.00	105.00
119	1 1/4	42	24	28	56.00	65.00	73.00	85.00	110.00
120	1 1/4	48	24	28	61.00	70.00	78.00	90.00	115.00
121	1 1/4	36	30	36	56.00	66.00	76.00	90.00	120.00
122	1 1/4	42	30	36	61.00	71.00	80.00	95.00	125.00
123	1 1/4	48	30	36	66.00	76.00	85.00	100.00	130.00
124	1 1/4	54	30	36	71.00	81.00	91.00	105.00	135.00
125	1 1/4	42	36	39	66.00	77.00	88.00	105.00	140.00
126	1 1/4	48	36	39	71.00	82.00	92.00	110.00	145.00
127	1 1/4	54	36	39	76.00	87.00	97.00	115.00	150.00
128	1 1/4	60	36	39	81.00	92.00	102.00	120.00	155.00
129	1 1/4	48	42	45 1/2	76.00	88.00	100.00	120.00	160.00
130	1 1/4	54	42	45 1/2	81.00	92.00	104.00	125.00	165.00
130 1/2	1 1/4	60	42	45 1/2	86.00	98.00	110.00	130.00	170.00
131	1 1/4	66	42	45 1/2	91.00	103.00	115.00	135.00	175.00
131 1/2	1 1/4	54	48	52	86.00	99.00	112.00	135.00	180.00
132	1 1/4	60	48	52	91.00	104.00	116.00	140.00	180.00
133	1 1/4	66	48	52	96.00	109.00	122.00	145.00	185.00
135	1 1/4	72	48	52	101.00	114.00	127.00	150.00	190.00
570	1 1/4	60	54	58 1/2	96.00	110.00	124.00	150.00	200.00
571	1 1/4	66	54	58 1/2	101.00	115.00	129.00	155.00	205.00
572	1 1/4	72	54	58 1/2	106.00	120.00	134.00	160.00	210.00
573	1 1/4	66	60	65	106.00	121.00	136.00	165.00	220.00
574	1 1/4	72	60	65	111.00	126.00	141.00	170.00	225.00
575	1 1/4	78	60	65	116.00	131.00	146.00	175.00	230.00
576	1 1/4	72	66	71 1/2	116.00	132.00	148.00	180.00	240.00
577	1 1/4	78	66	71 1/2	121.00	137.00	153.00	185.00	245.00
578	1 1/4	84	66	71 1/2	126.00	142.00	158.00	190.00	250.00
579	1 1/4	78	72	78	126.00	143.00	160.00	195.00	260.00
580	1 1/4	84	72	78	131.00	148.00	165.00	200.00	265.00
581	1 1/4	90	72	78	136.00	153.00	170.00	205.00	270.00
582	1 1/4	84	78	84 1/2	136.00	154.00	172.00	210.00	280.00
583	1 1/4	90	78	84 1/2	141.00	159.00	177.00	215.00	285.00
584	1 1/4	96	78	84 1/2	146.00	164.00	182.00	220.00	290.00

Any length or size not in the above list will be made to order.

EARTH AUGERS, PIPE PULLERS AND HOLDERS

EARTH AUGERS



Fig. 600



Fig. 601



Fig. 602



Fig. 603

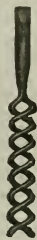


Fig. 604

PRICE LIST

Size of Hole Augers will Make, inches	2	2½	3	3½	4	4½	5	6
Threaded for Pipe	1	1½	1¾	1½	2	2	2	2
No. 600, Chisel Bit Auger, for clay and hard pan.....	\$6.00	\$6.50	\$7.00	\$8.50	\$10.00	\$15.00	\$20.00	\$25.00
No. 601, Pod Auger, for boring and removing core.....	6.00	6.50	7.00	8.50	10.00	15.00	20.00	25.00
No. 602, Ribbon Auger, for general boring.....	6.00	6.50	7.00	8.50	10.00	15.00	20.00	25.00
No. 603, Twist Auger, for general boring.....	6.00	6.50	7.00	8.50	10.00	15.00	20.00	25.00
No. 604, Spiral Auger, loosening and removing stones.....	6.00	6.50	7.00	8.50	10.00	15.00	20.00	25.00

Please order by trade number.

PIPE PULLER



Fig. 624

This pipe puller is arranged to draw all sizes of pipe. The dies are serrated so as to hold fast to the pipe and not to crush it. It is large enough in diameter for the coupling of the pipe to pass through.

One set of any size dies are furnished with puller without extra charge.

Extra sets of dies are furnished at same discount from list as puller.

PRICE LIST

Please order by trade number.

	Size Iron Pipe It Will Hold in Inches							
	¾	1	1¼	1½	2	2½	3	3½
No. 2, with 1, 1¼, 1½ or 2 inch dies.....	\$....	\$....	\$....	\$....	\$2.75	\$....	\$....	\$....
Extra dies for No. 2.....	.90	.90	.75	.50	.50	.....	.....	.....
No. 3, with 2, 2½ or 3 inch dies.....	.....	.....	.....	.....	.....	.....	6.00	.....
Extra dies for No. 3.....	.....	.....	.....	.....	.80	.75	.75	.....
No. 4, with 3½ or 4 inch dies.....	.....	.....	.....	.....	.....	.....	.....	.....
Extra dies for No. 4.....	.....	.....	.....	.....	.....	.....	2.25	2.00
No. 5, with 4, 4½ or 5 inch dies.....	.....	.....	.....	.....	.....	.....	.....	.....
Extra dies for No. 5.....	.....	.....	.....	.....	.....	.....	3.25	3.00
	Size Iron Pipe It Will Hold in Inches							
	4	4½	5	6	7	8	9	10
No. 4, with 3½ to 4 inch dies.....	\$8.50	\$....	\$....	\$....	\$....	\$....	\$....	\$....
Extra dies for No. 4.....	1.75	.....	.....	.....	.....	.....	.....	.....
No. 5, with 4, 4½ or 5 inch dies.....	.....	.....	10.00	.....	.....	.....	.....	.....
Extra dies for No. 5.....	2.75	2.50	2.00	.....	.....	.....	.....	.....
No. 6, with 4, 4½, 5 or 6 inch dies.....	.....	.....	.....	12.00	.....	.....	.....	.....
Extra dies for No. 6.....	3.00	2.75	2.50	2.25	.....	.....	.....	.....
No. 8, with 6, 7 or 8 inch dies, 4 screws.....	.....	.....	.....	.....	.....	15.00	.....	.....
Extra dies for No. 8.....	.....	.....	.....	4.00	8.50	8.00	.....	.....
No. 10, with 7, 8, 9 or 10 inch dies, 4 screws.....	.....	.....	.....	.....	.....	.....	.....	25.00
Extra dies for No. 10.....	.....	.....	.....	.....	.....	7.00	6.00	5.00

BABCOCK PIPE LIFTER AND HOLDER

For raising and holding pipe and lowering same into a well.



Fig. 143

Showing Machine as used in Raising Pipe

Holder will not tear or damage the pipe. Simple and rapid in its operation. Handles pipe from 1 to 2 inches, inclusive. Price, complete\$6.50

IRRIGATION STRAINERS—DEEP WELL CYLINDERS

IRRIGATION STRAINERS

These Strainers are made of heavy pipe, galvanized after the holes are put in. They are covered with a special woven wire cloth, having slotted openings and admitting twice as much water as ordinary gauze. The cloth is nearly one-sixteenth of an inch in thickness, and is so constructed that every part of its surface permits of filtration.

These Strainers are much stronger and more serviceable than all brass Strainers, and can be used in wells having heavy pressure or suction without injury to the wire cloth.

For efficiency, heavy work and large filtering capacity these Strainers have no equal.

Furnished with open ends, unless ordered with driving plug. Six inches blank on each end of Strainer.

PRICE PER LINEAL FOOT

Please Order by Figure Number, Stating Mesh of Gauze

Inside Diameter inches	Outside Diameter inches	Aggregate Openings, Square Inches per foot	Number of Gauze			
			60	80	90	100
1 ¼	1.785	17	\$ 0.75	\$ 0.95	\$ 1.20	\$ 1.50
1 ½	2.025	22	.90	1.15	1.45	1.75
2	2.495	24	1.25	1.50	1.80	2.25
2 ½	2.995	27	2.00	2.75	3.25	3.75
3	3.625	30	2.75	3.50	4.00	4.50
3 ½	4.125	33	3.15	4.00	4.50	5.25
4	4.625	36	3.90	4.75	5.25	6.25
4 ½	5.125	39	4.50	5.50	6.25	7.25
5	5.685	42	5.25	6.50	7.50	8.25
6	6.745	48	6.00	7.50	8.25	9.25
7	7.745	51	7.50	9.00	9.50	10.75
8	8.745	54	9.00	10.50	11.50	12.50
9	9.805	60	12.00	14.00	15.00	16.00
10	10.875	67	14.00	16.50	18.00	20.00
12	12.875	72	18.00	20.50	22.50	25.00



Fig. 405

DEEP WELL BRONZE BALL VALVE CYLINDER

No. 860

These Cylinders are designed for use in deep wells, and are made of best material and heavy throughout. They have four leather bronze ball plungers and double check valves, one a bronze ball, the other a flat poppet, making a leak impossible. For extremely deep wells we recommend these Cylinders.

Made with outside caps only.

PRICE LIST

Please Order by Figure Number

Size, inches	Fitted for Pipe, inches	Stroke inches	Iron	Brass Lined and Brass Body
2 x16	1 ¼	8	\$ 7.50	\$10.00
2 ¼ x16	1 ¼	8	8.25	11.00
2 ½ x16	1 ¼	8	9.25	12.00
2 ¾ x18	1 ¼	8	11.75	15.00
3 x18	1 ¼	8	15.75	19.50
2 x18	1 ¼	10	8.00	11.00
2 ¼ x18	1 ¼	10	8.75	12.00
2 ½ x18	1 ¼	10	9.75	13.00
2 ¾ x20	1 ¼	10	12.25	16.50
3 x20	1 ¼	10	16.25	22.00
2 x20	1 ¼	12	8.50	12.00
2 ¼ x20	1 ¼	12	9.25	13.00
2 ½ x20	1 ¼	12	10.25	14.00



Fig. 860

FOR PUMPS, ENGINES AND PIPE FITTINGS, SEE INDEX

ARTESIAN WELL EQUIPMENT

ALL-BRASS ARTESIAN WELL CYLINDER

With Spool or Ball Valves

No. 449

The body of this cylinder is seamless brass tubing. The valves are made sufficiently strong to withstand severe service. The leather packings are the best. The bottom of the plunger is tapped so that it may be screwed on the top of the check valve, thus enabling the plunger and check valves to be withdrawn at one operation. Both valves are fitted with heavy leather faced spool poppets, or with balls. This cylinder may be placed in open wells and in drilled wells where the pipe or casing is large enough to take the cylinder attachments. It is adapted to work in deep wells and to stand severe service.

Furnished with spool valves unless otherwise ordered.

PRICE LIST

Please order by figure number.

Inside Dia. inches	Length Stroke inches	Extreme Length Cyl. inches	Capacity per Stroke gallons	Extreme Outside Diam. of Attachments inches	Top and Bottom Connecting Pipes inches	Size of Pin in Plunger ins.	With Spool Valves, Each	With Ball Valves, Each
1 7/8	12	23	.12	2 1/8	2	5/8	\$17.00	\$20.00
1 7/8	16	27	.16	2 1/8	2	5/8	18.00	21.00
1 7/8	24	35	.25	2 1/8	2	5/8	21.00	24.00
2 1/4	12	25	.2	3 1/8	2 1/2	7/8	30.00	34.00
2 1/4	16	29	.275	3 1/8	2 1/2	7/8	32.00	36.00
2 1/4	24	37	.41	3 1/8	2 1/2	7/8	35.00	39.00
2 1/4	36	49	.61	3 1/8	2 1/2	7/8	40.00	44.00
2 3/4	12	26	.3	3 3/8	3	7/8	38.00	43.00
2 3/4	16	30	.411	3 3/8	3	7/8	40.00	45.00
2 3/4	24	38	.61	3 3/8	3	7/8	44.00	49.00
2 3/4	36	50	.924	3 3/8	3	7/8	50.00	55.00
3 1/4	12	28	.432	4 1/8	3 1/2	7/8	52.00	59.00
3 1/4	16	32	.574	4 1/8	3 1/2	7/8	55.00	62.00
3 1/4	24	40	.862	4 1/8	3 1/2	7/8	60.00	67.00
3 1/4	36	52	1.292	4 1/8	3 1/2	7/8	68.00	75.00
3 3/4	12	30	.574	5 1/8	4	1 1/8	70.00	80.00
3 3/4	16	34	.764	5 1/8	4	1 1/8	73.00	83.00
3 3/4	24	42	1.147	5 1/8	4	1 1/8	78.00	88.00
3 3/4	36	54	1.72	5 1/8	4	1 1/8	92.00	102.00
4 1/4	12	34	.737	5 5/8	4 1/2	1 1/8	110.00	125.00
4 1/4	16	38	.982	5 5/8	4 1/2	1 1/8	115.00	130.00
4 1/4	24	46	1.47	5 5/8	4 1/2	1 1/8	125.00	140.00
4 1/4	36	58	2.21	5 5/8	4 1/2	1 1/8	140.00	155.00
4 3/4	12	35	.92	6 1/8	5	1 1/8	140.00	160.00
4 3/4	16	39	1.227	6 1/8	5	1 1/8	147.00	167.00
4 3/4	24	47	1.84	6 1/8	5	1 1/8	160.00	180.00
4 3/4	36	59	2.76	6 1/8	5	1 1/8	182.00	202.00
5 3/4	12	41	1.348	7 3/8	6	1 1/8	190.00	215.00
5 3/4	16	45	1.79	7 3/8	6	1 1/8	198.00	223.00
5 3/4	24	53	2.70	7 3/8	6	1 1/8	210.00	235.00
5 3/4	36	65	4.05	7 3/8	6	1 1/8	230.00	255.00



Fig. 654



Fig. 449

BRASS LINED WORKING BARREL

Fitted with Four Leather Plungers and Bronze Ball Valves.

No. 654

Number 654 cylinders are regularly threaded for iron pipe but will be furnished for well casing at the same prices for corresponding sizes; intermediate sizes will take the list of the next larger size.

PRICE LIST

Please order by figure number.

Size of Well inches	Inside Diameter of Cylinder inches	Length Stroke inches	Length Barrel inches	Price Each	Size of Well inches	Inside Diameter of Cylinder inches	Length Stroke inches	Length Barrel inches	Price Each
2	1 1/8	10	24	\$11.50	4 1/2	4 1/4	10	36	\$54.50
2	1 1/8	14	28	12.00	4 1/2	4 1/4	14	40	56.00
2	1 1/8	24	38	13.50	4 1/2	4 1/4	24	50	61.50
2	1 1/8	36	50	15.50	4 1/2	4 1/4	36	62	65.50
2 1/2	2 1/4	10	25	15.50	5	4 3/4	24	51	78.00
2 1/2	2 1/4	14	29	16.50	5	4 3/4	36	63	86.00
2 1/2	2 1/4	24	39	18.00	6	5 3/4	24	57	112.00
2 1/2	2 1/4	36	51	19.50	6	5 3/4	36	69	124.00
3	2 3/4	10	26	21.50	7	6 3/4	24	60	152.00
3	2 3/4	14	30	22.50	7	6 3/4	36	72	166.00
3	2 3/4	24	40	24.50	8	7 1/4	24	60	226.00
3	2 3/4	36	52	27.00	8	7 1/4	36	72	250.00
3 1/2	3 1/4	10	32	31.50	9	8 1/2	24	62	285.00
3 1/2	3 1/4	14	36	32.50	9	8 1/2	36	74	325.00
3 1/2	3 1/4	24	46	35.00	10	9 1/2	24	64	460.00
3 1/2	3 1/4	36	58	38.00	10	9 1/2	36	76	490.00
4	3 3/4	10	34	44.50					
4	3 3/4	14	38	46.00					
4	3 3/4	24	48	49.00					
4	3 3/4	36	60	52.50					

FOR PUMPS, PIPE AND FITTINGS, SEE INDEX

WELL CYLINDERS, PUMP EQUIPMENT



Fig. 440

WROUGHT-IRON TUBULAR
WELL CYLINDER

No. 440

This cylinder is made of either galvanized or black extra strong wrought pipe, bored and polished. Unless otherwise ordered it will be furnished with a shoulder for holding a turned coupling for seating the check valve. In 24 and 36 inch lengths the shoulders are 3 inches from the bottom, and in 48 inch lengths, 12 inches.

A galvanized cylinder without a shoe will be furnished unless otherwise specified.

PRICE LIST

Please order by figure number.

Diam. of Cylinder inches	Length of Cylinder inches	Price, Painted without Driving Shoe	Price, Painted with Driving Shoe	Price, Galv. without Driving Shoe	Price, Galv. with Driving Shoe
2	24	\$2.25	\$3.00	\$2.80	\$3.50
2	36	3.25	4.00	3.80	4.50
2	48	4.25	5.00	5.00	5.75
2 1/2	36	5.75	6.65	6.50	7.50
2 1/2	48	8.35	8.50	8.25	9.25
3	36	8.00	9.00	8.80	10.00
3	48	10.50	11.50	11.00	12.25
4	36	12.00	14.00	13.75	15.75
4	48	15.50	17.50	18.00	20.00



Fig. 441

BRASS LINED TUBULAR WELL
CYLINDER

Galvanized. No. 441

This cylinder is made of wrought pipe bored out, with a lining of seamless brass tubing swaged into position. This cylinder possesses the smoothness of an all-brass-tube cylinder, and is not as liable to become injured by external pressure or sudden jars. For the small additional cost it pays to use this cylinder instead of the polished iron, as the pump will work more easily and the leathers on plunger will wear longer.

Unless otherwise ordered this cylinder will be furnished with a shoulder three inches from the bottom as illustrated.

PRICE LIST

Please order by figure number.

Diameter of Cylinder inches	Length of Cylinder inches	Price, Galvanized, with Driving Shoe	Price, Galvanized, without Driving Shoe
2	24	\$6.10	\$5.25
2	36	7.75	6.90
2	48	9.80	9.00
2 1/2	24	8.15	7.00
2 1/2	36	10.50	9.30
2 1/2	48	14.00	12.80
3	24	10.00	8.50
3	36	13.00	11.50
3	48	17.00	15.50
4	36	19.00	16.50
4	48	24.00	21.50

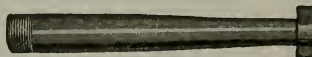
SEATING TOOL FOR
BRASS CYLINDER

Fig. 451

Size for Cylinder inches	Price, each
2	\$0.60
2 1/2	.90
3	1.20
4	2.40
5	6.00
6	8.00
7	10.00
8	12.00

Please order by figure number.



Fig. 870

BRONZE BALLS

No. 870

These balls are turned from hard bronze metal and are guaranteed to be perfectly true.

PRICE LIST

Diameter of Ball inches	Each	Diameter of Ball inches	Each
3/8	\$0.30	3	\$4.75
1/2	.30	3 1/4	5.50
5/8	.30	3 1/2	6.00
3/4	.35	4	6.75
7/8	.35	4 1/4	7.75
1 1/8	.45	4 1/2	10.00
1 1/4	.50	4 3/4	10.00
1 1/2	.70	4 3/4	11.00
1 3/4	.90	5	12.00
1 7/8	1.10	5 1/4	12.50
2	1.40	5 1/2	13.50
2 1/4	2.15	6	15.00
2 1/2	2.75	6 3/4	17.50
2 3/4	3.75	7	25.00
3	4.25	...	...



Fig. 702

STANDARD CUP LEATHERS

No. 702

Our Standard Cup Leathers are made of a high grade oak-tanned stock and are intended to meet the demand for low priced cups which will give satisfactory service under ordinary conditions.

PRICE LIST

Adopted by Pump Leather Manufacturers,
April 17, 1911.

Please order by figure number.

Size inches	Price per gross	Size inches	Price per gross
1	\$3.50	3 3/4	\$29.00
1 1/4	4.50	4	31.50
1 1/2	6.00	4 1/4	37.50
1 3/4	8.00	4 1/2	40.00
2	9.00	4 3/4	43.00
2 1/4	10.00	5	49.00
2 1/2	13.00	5 1/4	50.00
2 3/4	14.50	5 1/2	57.50
3	16.50	5 3/4	65.00
3 1/4	18.50	6	72.00
3 1/2	24.50	...	...

ROD COUPLINGS, SAND PUMPS AND PIPE HOLDERS

WOOD ROD COUPLINGS

Two, Three and Four Hole

These couplings are made with a socket for the ends of the rod to be driven into, to prevent splitting.

PRICE LIST

Order by figure number

Fig. No.	Description	Iron Pipe Threads	Per set
430	For 1 and 1½ inch rod, black, 2 hole	¾	\$0.10
432	For 1 and 1½ inch rod, galvanized, 2 hole	¾	.14
435	For 1 and 1½ inch rod, black, 3 hole	¾	.16
435	For 1 and 1½ inch rod, galvanized, 3 hole	¾	.20
436	For 1½ and 1¾ inch rod, black, 3 hole	1½	.20
436	For 1½ and 1¾ inch rod, galvanized, 3 hole	1½	.24
437	For 1½ and 1¾ inch rod, black, 4 hole	¾	.60
437	For 1½ and 1¾ inch rod, galvanized, 4 hole	¾	.80
438 ½	For 1 and 1½ inch rod, black, 4 hole	¾	.20
438 ½	For 1 and 1½ inch rod, galvanized, 4 hole	¾	.24

FORGED SUCKER ROD COUPLINGS

These couplings are forged, have straight box and pin same sizes as oil-well couplings and are interchangeable with them.

PRICE LIST

Order by figure number

Fig. No.	Size of Box and Pin inches	Size of Wood Rod inches	Adapted for Working Barrels, Diameter in inches	Black per set	Galvanized per set
408	¾, 12 threads	1½	1¾ to 2¼	\$0.60	\$0.85
409	¾, 10 threads	1¾	2¼ to 2¾	.75	1.15
410	1, 10 threads	1¾	2¾ to 3¾	1.30	1.75
411	1½, 8 threads	2¼	3¾ to 5¾	2.00	2.60
412	1½, 8 threads	3½	5¾ to 8¾	5.00	6.00



Fig. 430



Fig. 408



Fig. 629

SAND PUMPS

PRICE LIST

Please order by figure number.

Size of Well inches	Each
2	\$2.50
2½	2.75
3	3.00
4	4.00
5	5.00
6	6.00
7	7.00
8	8.00

THE "MONITOR" PIPE HOLDER

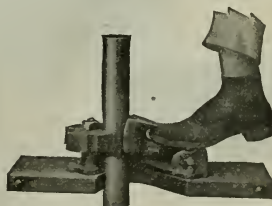


Fig 543

Pipe cannot slip. Adjustment automatic. Holds from 1 to 2 inch pipe, inclusive. Strong in construction. Easy to operate.

Price each\$5.00

WELL DRIVE SHOES, PACKERS AND COUPLINGS



Fig. 433



Fig. 419



Fig. 421

No. 421 FORGED STEEL SHOES

These shoes are made of steel forgings and are turned true inside and outside; they have long recess, as shown in illustration, to prevent the pipe from spreading or breaking off at the end of threads. For severe driving and large pipe we recommend these shoes.

Price List

Size of Pipe in.	Price	Size of Pipe inches	Price	Size of Pipe inches	Price
2	\$1.50	4½	\$ 8.00	10	\$ 36.00
2½	2.50	5	10.00	12	48.00
3	3.50	6	12.00	14	70.00
3½	5.00	7	15.00	15	90.00
4	6.00	8	18.00	16	110.00

Shoes for well casing will be supplied at same list, intermediate sizes being charged at price of next larger size.

WELL PACKER

No. 495

A well packer for making tight joint between strainer and well casing; it is also used as support for cylinders.

To locate strainer in well, screw well packer on upper end of same, attach seating tool to drill rod and insert into key seat in well packer, lower all in well to place where strainer is to be located, turn drill rod to the right which forces taper wedge into rubber ring, expanding same and making tight joint.

To remove strainer from well, lower seating tool to key seat in well packer, turn to left, partly unscrewing taper wedge from coupling, which contracts rubber packer and permits strainer to be withdrawn.

Price List—No. 495

Diameter of Well inches	Bottom of Packer Threaded for Pipe inches	Price	Diameter of Well inches	Bottom of Packer Threaded for Pipe inches	Price
2	1¼	\$1.50	4½	3	\$ 7.50
2½	1½	2.00	5	3½	10.00
3	2	2.70	6	4	14.00
3½	2½	4.50	7	5	20.00
4	3	6.00	8	6	30.00



Fig. 495

No. 433 MALLEABLE IRON DRIVE SHOES
With or Without Shoulder

Price List

Size of Pipe inches	Price	Size of Pipe inches	Price
2	\$0.50	3½	\$1.20
2½	.70	4	1.50
3	.90		

No. 419 CAST STEEL DRIVE SHOES

These shoes are made of steel castings and are stronger than the malleable shoes. They are furnished both finished and rough, the finished shoe being turned true both inside and outside.

Price List

Size of Pipe in.	Fin-ished	Rough	Size of Pipe in.	Fin-ished	Rough
1½	\$1.00	\$0.80	4½	\$6.00	\$3.75
2	1.00	.80	5	7.00	4.25
2½	1.30	1.10	*5½	9.00	6.50
3	2.00	1.50	6	9.00	6.50
3½	3.50	2.50	8	12.00	8.00
4	4.00	2.75	10	18.00	12.50
...	....	....	12	35.00	25.00

* For Well Casing.

VALVE HOOK FOR SEATING
CYLINDERS

Price List—No. 497

Please order by trade number

For 2½ and 3 inch well...	\$1.00
For 3½ and 4 inch well...	1.50
For 4½ and 5 inch well...	2.00
For 6 inch well.....	2.50
For 7 inch well.....	3.00
For 8 inch well.....	3.50
For 10 inch well.....	4.00



Fig. 497

PIPE, ROD AND REDUCER COUPLINGS



Fig. 430



Fig. 490



Fig. 420

REDUCER COUPLINGS

For ½ inch and ¾ inch pipe and steel pump rods.

Price List—Figs. 430-490

Trade No.	Female	Female	Galvanized per lb.	Black per lb.	Trade No.	Ma'le	Female	Galvanized per lb.	Black per lb.
438	¾ Pipe x ¾ Rod		\$0.30	\$0.25	490	¾ Pipe x ¾ Rod		\$0.30	\$0.25
439	¾ Pipe x ½ Rod		.30	.25	491	¾ Pipe x ¾ Rod		.30	.25
438A	½ Pipe x ¾ Rod		.30	.25	490A	½ Pipe x ¾ Rod		.30	.25
439A	½ Pipe x ½ Rod		.30	.25	491A	½ Pipe x ¾ Rod		.30	.25

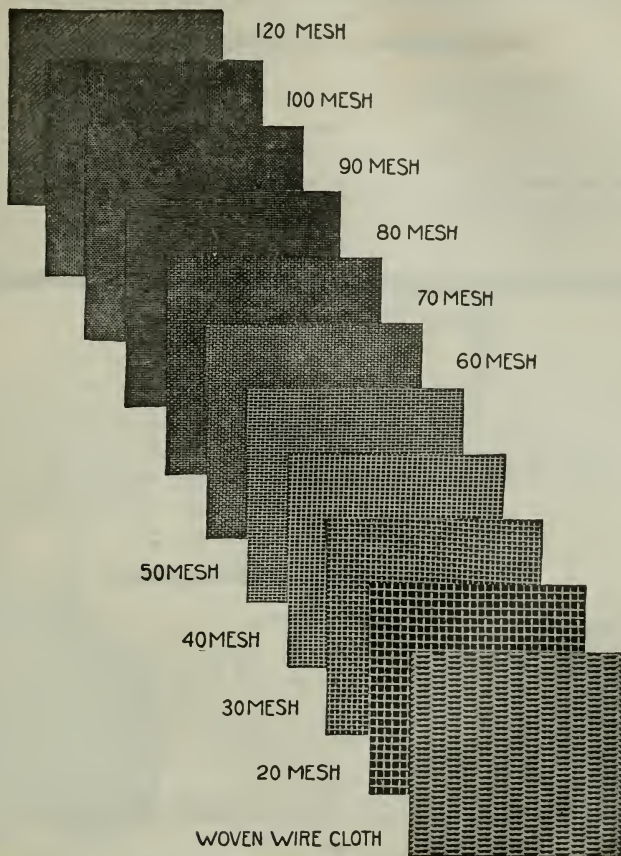
Fig. 429 PIPE AND ROD COUPLINGS

For ¾ inch Pipe and ¾ inch Iron Rod

Price List

Description	Price, Galvanized per lb.	Price, Plain per lb.
Pipe or iron rod thread	\$0.22	\$0.18

BRASS WIRE CLOTH



We carry in stock the following meshes Brass Wire Cloth, 36 inches in width, except No. 60 renovated cloth which is 12 inches wide.

Price List

Mesh Number	Price, per Square Foot	Mesh Number	Price, per Square Foot
20	\$0.50	70	\$0.90
30	.65	80	1.00
40	.40	90	1.20
50	.50	100	1.50
60	.60	120	3.00
60 renovated	.30	Woven wire cloth	1.50

FOR STEEL MESH, SAND AND GRAVEL SCREENS, SEE INDEX

LUMBERMEN'S AND LOGGERS' TOOLS

PEAVIES



Fig. 21

Patent Ribbed Socket Peavey

The lightest, strongest, most durable and evenly balanced peavey manufactured. The pikes and sockets are set in oil paint, with 60,000 lbs. screw pressure.

No. 21. 2½ in. x 5 ft., Rock Maple Handleper doz. \$24.00

CANT HOOKS



Fig. 318

Chisel Point or Old Time Hook

For ordinary use in the woods or mill yards, the old time Cant Hook, with modern improvements, material, and workmanship is the best.

No. 318. 2½ in. x 4½ ft., Rock Maple Handle, Chisel Point Hook...per doz. \$18.50



Fig. 722

Patent Combined with Duck Bill Hook

The clasp and toe ring are connected so that it makes a guard that protects the stock from wearing, also holds the hook in the proper place and clasp from turning. It is the lightest and strongest Cant Hook ever manufactured.

No. 722. 2½ in. x 4½ ft., Rock Maple Handle, Duck Bill Hook....per doz. \$19.40

TIMBER GRAPPLES OR LUG HOOKS



Fig. 428

For handling railroad ties, telegraph poles, pulp wood, square timber, loading or unloading vessels, cars, or teams, building bridges and other kindred employment.

No. 428. With 4 ft. Handleper doz. \$25.00
No. 490. Extra heavy, 5 ft. Handle..... " 35.80

PICKAROONS



Fig. 354

Best Ohio White Ash, Twisted Point

Pikes and hooks are forged from one piece of steel. Point twisted, three seamless polished steel rings, pikes screwed in with oil paint.

No. 357. With 2 ft. Handles..per doz.	\$12.40	No. 407. With 12 ft. Handles...per doz.	\$20.30
No. 350. With 4½ ft. Handles. "	15.00	No. 408. With 14 ft. Handles... "	24.50
No. 353. With 6 ft. Handles. "	15.80	No. 409. With 16 ft. Handles... "	31.30
No. 354. With 8 ft. Handles. "	17.10	No. 410. With 18 ft. Handles... "	39.90
No. 406. With 10 ft. Handles. "	18.00	No. 411. With 20 ft. Handles... "	52.00



Fig. 381

STEEL PEAVEY OR CANT HOOK BOLTS

No. 381. Per 100 \$4.50

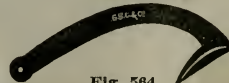


Fig. 564

CANT HOOK AND PEAVEY HOOKS

No. 564. Duck Bill Peavey ....per doz.	\$9.70
No. 369. Round Peavey	9.70
No. 570. Chisel Point Cant Hook "	8.80

LUMBERMEN'S AND LOGGERS' ACCESSORIES

BEST OHIO WHITE ASH PICKAROONS

Twisted Point



Fig. 36

Pikes and hooks are forged from one piece of steel. Point twisted, three seamless polished steel rings, pikes screwed in with oil paint.

No. 357. With 2 ft. handles.	per doz. \$12.40	No. 407. With 12 ft. handles.	per doz. \$20.30
No. 350. With 4½ ft. handles.	" 15.00	No. 408. With 14 ft. handles.	" 21.50
No. 353. With 6 ft. handles.	" 15.80	No. 409. With 16 ft. handles.	" 31.30
No. 354. With 8 ft. handles.	" 17.10	No. 410. With 18 ft. handles.	" 39.90
No. 406. With 10 ft. handles.	" 18.00	No. 411. With 20 ft. handles.	" 52.00

NAVAL PICKAROONS WITH HANDLES

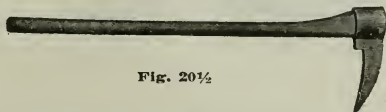


Fig. 20½

For Handling Pulp Wood, Cedar Posts, etc.

No. 20½. Naval Pickaroons with handles, steel point, axe eye, 3 foot handle. per doz. \$12.50

LEATHER APRONS FOR LUMBER HANDLERS



Fig. 461

Made from extra heavy russet stuffed split leather, with one inch wide hip straps and roller buckles. All straps fastened with patent rivets, smooth heads on both sides. Best wearing aprons on the market.

No. 561. Size 26x21 in. per doz. \$24.00

No. 562. Size 26x24 in. with 3 in bib. per doz. 25.50

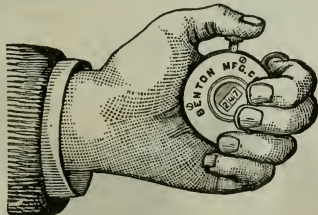
No. 461. Size 26x27 in. with 6 in. bib and 33 in. neckstrap with buckle. per doz. 30.00

No. 462. Size 24x26 in. with 6 in. bib and 33 in. neckstrap with buckle. per doz. 27.00



Fig. 561

BENTON TALLY REGISTER



No. 0. Records to 1,000.	each \$2.50
No. 1. Records to 10,000.	" 3.50

MARKING POTS



Made out of IXX tin, pliced. Well made—not on the order of those cheap stamped ones now on the market. Something that will last.

No. 1. 6x4 IXX tin.	per doz. \$1.00
No. 2. 6x4 16-oz. copper.	" 7.00

FOR MARKING BRUSHES, SEE INDEX

LUMBER ROLLERS

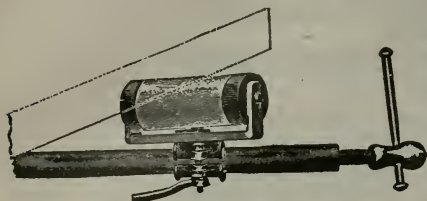


Fig. 741. Iron Side Roller

The best and cheapest device on the market for quickly and cheaply loading and unloading lumber cars. We have in two lengths, regular and extra length; both are made of two inch pipe. Length of roller, 15 inches.

Regular Length

Length of iron pipe, 4 feet. Length of screw, 16 inches. Entire length, 5 feet 4 incheseach \$10.00

Extra Length

Length of iron pipe, 4 feet 6 inches. Length of screw, 16 inches. Entire length, 5 feet 10 incheseach 10.80

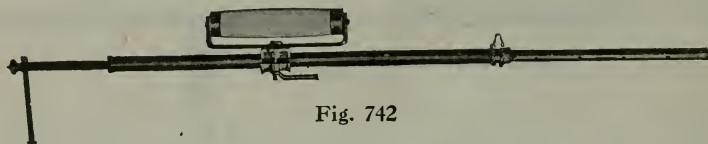


Fig. 742

DOUBLE EXTENSION LUMBER ROLLER

This new double extension lumber roller can be instantly attached to not only any size door from 5 to 8 feet wide but also the ends of a gondola. Being made of a high quality 2 inch steel tubing it will not sag under any reasonable load even when fully extended. It is equipped with a square thread $1\frac{1}{2}$ inch steel screw on one end and a 3 foot beam on the other, which fits snugly into the main $4\frac{1}{2}$ foot beam, being held in place by a pin. The roller is easily adjustable to any position.

Besides the Saving in Breakage, the Time Saved Alone Will Soon Pay for the Roller

With 18 inch wood rollereach \$11.50
With 16 inch iron roller " 12.00



Fig. 743

TIMBER TRUCK

Regular has 6 inch iron roller, 17x20 inch frame made of $2\frac{1}{2}$ inch timbereach \$ 7.50
Extra heavy has 7 inch iron roller, 20x24 inch frame made of 3 inch timbereach 10.00
Regular with concave roller, for pipeeach 10.00
Extra rollers for timber truck,.... " 3.00
Extra boxes for timber truckset .50

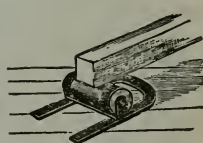
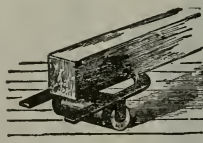


Fig. 744

COMBINED HORSESHOE DOLLY AND TIMBER ROLLER

Horseshoe Dolly has 4 inch diameter roller; length of roller, 14 inches; horseshoe is $\frac{1}{2}$ x $1\frac{1}{2}$ inches, iron; length of horseshoe, 12 inches.....each \$4.00



Fig. 745

END ROLLERS

End Roller has 4 inch diameter roller; length of roller, 14 inches. each \$4.00

Fig. 746. LUMBER GAUGES

Nickel Plated

No. 0.	Measures	$1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2 inch.....	each	\$0.50
No. 00.	Measures	$\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, 2	each	.50
No. 000.	Measures	$\frac{5}{8}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, 2, $2\frac{1}{2}$	"	.50



Fig. 746

Lumbermen's—WOOD AND IRON WORK—Loggers'

Strictly Extra Selected Second Growth Maple

PEAVY HANDLES

No. 856. 2½x5 ft. bored for Peavey...doz. \$6.20

CANT HOOK HANDLES

No. 855. 2½ in. x 4½ ft.per doz. \$5.80

LUG HOOK HANDLES

No. 770. 4 ft.per doz. \$4.20

No. 741. 5 ft.per doz. \$7.20

White Ash Handles for Pickeroons and Pike Poles

No. 74. 8 ft.per doz. \$11.00
 No. 75. 10 ft. " 12.50
 No. 76. 12 ft. " 13.50
 No. 77. 14 ft. " 16.50

No. 78. 16 ft.per doz. \$21.00
 No. 79. 18 ft. " 30.00
 No. 80. 20 ft. " 45.00

SKIDDING TONGS—IRON WORK



Fig. 504
Octagon



Fig. 508
With Rings



Fig. 507
Flat

SKIDDING TONGS WITH SWIVEL HOOKS

No. 504. 1 inch octagon steel...each \$5.50
 No. 505. 1½ inch octagon steel... " 6.15
 No. 506. 1¼ inch octagon steel... " 7.18
 No. 507. 1½x½ inch flat steel... " 6.15

SKIDDING TONGS WITH RINGS

No. 508. 1 inch octagon steel...each \$4.70
 No. 509. 1½ inch octagon steel... " 5.25
 No. 510. 1¼ inch octagon steel... " 6.85
 No. 511. 1½x½ inch flat steel... " 5.25

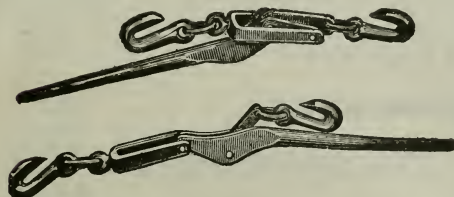


Fig. 736

Fig. 737. JOIST OR TIMBER TONGS

For Hoisting Timber, Scantlings, Planks, Etc.

1 inch octagon steeleach \$3.75
 1½ inch octagon steel " 5.50
 7⁄8x1½ inch flat steel " 2.75

GOODYEAR LOAD BINDERS

For binding logs, hay, lumber, pipe or large loads of any description it has no equal. Weight 21 pounds per pair.

Each \$2.50
 Per pair 5.00



Fig. 737

ELECTRICAL CONSTRUCTION PIKE POLES

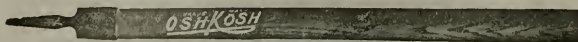


Fig. 808

All our poles are made of soft, old growth, yellow Washington Fir, free from defects, absolutely straight grained and running from 14 to 18 annular rings to the inch. This fir has proved to be lighter and stronger than any other kind and it does not easily splinter off in the user's hands as do the hard, brittle varieties. It costs a little more than other kinds, but it is well worth it. All poles are nicely sanded before leaving the factory. The pikes are of genuine hand-forged crucible steel with a long taper and screwed in.

Fig. 808 STANDARD SMALL SIZE

With Handles of 1 1/4-inch even diameter

Order by Number

No. 805.	1 1/4	inch, 10	foot, wt. per doz.	70 lbs	per doz.	\$13.50
No. 806.	1 1/4	inch, 12	foot, wt. per doz.	90 lbs	per doz.	15.00
No. 807.	1 1/4	inch, 14	foot, wt. per doz.	110 lbs	per doz.	17.00
No. 808.	1 1/4	inch, 16	foot, wt. per doz.	130 lbs	per doz.	20.00

Fig. 808 STANDARD HEAVY SIZE

With Handles of 2 1/4-inch even diameter

Order by Number

No. 809.	2 1/4	inch x 10	foot, wt. per doz.	80 lbs	per doz.	\$18.00
No. 810.	2 1/4	inch x 12	foot, wt. per doz.	100 lbs	per doz.	20.50
No. 811.	2 1/4	inch x 14	foot, wt. per doz.	120 lbs	per doz.	23.50
No. 812.	2 1/4	inch x 16	foot, wt. per doz.	140 lbs	per doz.	26.50
No. 813.	2 1/4	inch x 18	foot, wt. per doz.	170 lbs	per doz.	30.00
No. 814.	2 1/4	inch x 20	foot, wt. per doz.	200 lbs	per doz.	34.50
No. 815.	2 1/4	inch x 22	foot, wt. per doz.	230 lbs	per doz.	41.00
No. 816.	2 1/4	inch x 24	foot, wt. per doz.	260 lbs	per doz.	47.00



Fig. 820

WESTERN ELECTRIC PATTERN

These poles are 2 1/4 inches in diameter in the middle and taper to 2 inches at each end, giving the strongest and most efficient pole on the market. The extra strength is in the middle, just where it is needed.

The pike is of 5/8-inch square crucible steel projecting 4 inches from the end of the pole and with a 2-inch taper. The pike is securely held in the pole by a 1/4-inch rivet running through the ferrule, pole and pike itself. We cannot recommend this pole too highly.

Order by Number

No. 817.	2 1/4	inch x 10	foot, wt. per doz.	140 lbs	per doz.	\$20.00
No. 818.	2 1/4	inch x 12	foot, wt. per doz.	150 lbs	per doz.	23.75
No. 819.	2 1/4	inch x 14	foot, wt. per doz.	165 lbs	per doz.	27.50
No. 820.	2 1/4	inch x 16	foot, wt. per doz.	185 lbs	per doz.	31.50
No. 821.	2 1/4	inch x 18	foot, wt. per doz.	215 lbs	per doz.	35.00
No. 822.	2 1/4	inch x 20	foot, wt. per doz.	240 lbs	per doz.	39.00
No. 823.	2 1/4	inch x 22	foot, wt. per doz.	260 lbs	per doz.	45.00
No. 824.	2 1/4	inch x 24	foot, wt. per doz.	285 lbs	per doz.	50.00

GUARDED PIKE POLES



Fig. 795

Handles made of the same Select Washington Fir as pike poles. The forks are malleable iron with fork and socket cast in one piece.

Order by Number

No. 832.	10	foot, 1 1/4	inch handle, wt. per doz.	100 lbs	per doz.	\$24.00
No. 833.	12	foot, 1 1/4	inch handle, wt. per doz.	120 lbs	per doz.	25.50
No. 834.	14	foot, 1 1/4	inch handle, wt. per doz.	140 lbs	per doz.	27.00
No. 795.	16	foot, 1 1/4	inch handle, wt. per doz.	160 lbs	per doz.	30.00
No. 796.	12	foot, 2 1/4	inch handle, wt. per doz.	165 lbs	per doz.	30.00
No. 797.	14	foot, 2 1/4	inch handle, wt. per doz.	180 lbs	per doz.	32.00
No. 835.	16	foot, 2 1/4	inch handle, wt. per doz.	195 lbs	per doz.	34.00
No. 836.	18	foot, 2 1/4	inch handle, wt. per doz.	210 lbs	per doz.	36.00
No. 837.	20	foot, 2 1/4	inch handle, wt. per doz.	235 lbs	per doz.	39.00
No. 798.	22	foot, 2 1/4	inch handle, wt. per doz.	250 lbs	per doz.	42.00
No. 799.	24	foot, 2 1/4	inch handle, wt. per doz.	265 lbs	per doz.	45.00

FOR OTHER STYLES OF ELECTRICIANS' TOOLS, SEE INDEX

TREE TRIMMERS



Fig. 912



Fig. 917

These trimmers are heavily constructed of a malleable iron socket and hook, to which is bolted the tool steel cutting knife, which is an integral part of the operating lever. This knife is operated by a rope either attached to a lever or loose, as desired. The knife automatically springs back into a cutting position when the limb is cut, being operated by a flat steel coil spring. This trimmer is somewhat heavier than others, but is just that much more efficient and will stand up under just that much harder work, and will easily cut a limb $1\frac{1}{2}$ inches thick.

It comes either without saw, 18 inches over all, or with saw, 26 inches over all. Threaded holes are provided on the trimmer with the saw in order that it may be used without the saw if desired or new saws put on in case of breakage. The socket is tapered slightly to provide for a tight drive fit on the pole. Handles of Washington Fir, $1\frac{1}{4}$ inches in diameter in lengths of 12 to 18 feet.

Order by Number

No. 912.	Trimmer, no saw, weight per doz. 50 lbs.	per doz.	\$30.00
No. 917.	Trimmer with saw, weight per doz. 60 lbs.	"	40.50
	Extra saws only	"	12.00

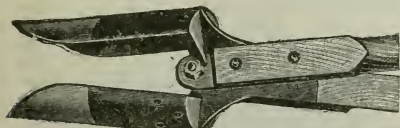
Tree Trimmer Handles—One Piece

No. 913.	12 foot, $1\frac{1}{4}$ inch diameter, wt. per doz. 80 lbs.	per doz.	\$10.00
No. 914.	14 foot, $1\frac{1}{4}$ inch diameter wt. per doz. 100 lbs.	"	11.25
No. 915.	16 foot, $1\frac{1}{4}$ inch diameter, wt. per doz. 120 lbs.	"	13.25
No. 916.	18 foot, $1\frac{1}{4}$ inch diameter, wt. per doz. 140 lbs.	"	16.25

Tree Trimmer Handles—Two Piece with Brass Ferrule

No. 918.	12 foot, $1\frac{1}{4}$ inch diameter, wt. per doz. 90 lbs.	per doz.	\$20.00
No. 919.	14 foot, $1\frac{1}{4}$ inch diameter, wt. per doz. 110 lbs.	"	21.25
No. 920.	16 foot, $1\frac{1}{4}$ inch diameter, wt. per doz. 130 lbs.	"	23.25
No. 921.	18 foot, $1\frac{1}{4}$ inch diameter, wt. per doz. 150 lbs.	"	26.25

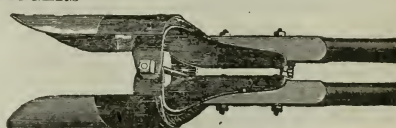
POST HOLE DIGGERS



Eureka Pattern

Eureka pattern. Half round handles; steel blades; size $9\frac{3}{4} \times 4\frac{1}{4}$ inches; 14 gauge. Digs holes 6 inches diameter. Handles 4 feet long. Weight per doz., 120 lbs. Packed three to a bundle.

Price per doz. \$24.00



G. B. C. Pattern

G. B. C. Steel blades. Malleable handle sockets bolted to round hardwood handles 4 feet long. Blades $9\frac{3}{4} \times 4\frac{1}{4}$ inches; 14 gauge. Digs holes 6 inches in diameter. Weight per doz., 120 lbs.

Price per doz. \$24.00

POST HOLE AUGER

Made with hollow steel tube stem, with steel boring blades and point. A proved auger for boring holes under ordinary conditions.

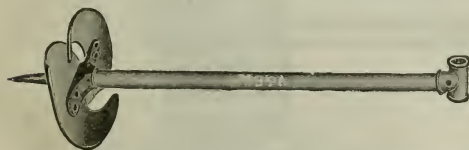


Fig. 885

No.	Diameter Inches	Stem feet	Wt. lbs.	Price each
885	6	$3\frac{1}{2}$	5	\$2.00
886	8	$3\frac{1}{2}$	5	2.00
887	10	$3\frac{1}{2}$	6	2.00
888	12	5	13	7.20
889	14	5	14	8.00

RAILROAD SCUFFLE HOES

Special forged steel tempered blade, bronze finished steel cap. Selected straight 5 foot handle. Heavy malleable shank. Size of blade $4 \times 8\frac{1}{2}$ inches. Weight 46 lbs. per doz.

Price per doz. \$15.00



THE OSHKOSH POLE ANCHOR

THE ONLY PERFECT ANCHOR ON THE MARKET
FOR ANCHORING ALL STYLES AND KINDS OF POLES



Fig. 938 Expanded

It is thoroughly automatic—requiring but one man to set it and no extra tools.

It has the widest expansion in virgin soil of any anchor made—which means “maximum resistance with minimum digging.”

Principle of expansion is best, because, depending on the strain to expand it, its dependability increases (instead of decreases) as emergency strains are placed upon it.

It cannot be carelessly set. If for any reason it is left in a partially expanded position, when a greater or emergency strain is placed upon it it will continue to expand until completely expanded, when it will take the maximum resistance of the soil to affect it.



Fig. 938A Closed

Its peculiar construction will permit it to be used in rocky soil where other anchors fail.

Owing to the convex top surface of the blades, it exerts a great resisting force, as the force is diffused outward, affecting a wider range of soil than any other anchor. As lines of resisting force are always vertical to the plane of the point of contact of force, the resisting force to the passage of this anchor through the soil is fan-shaped—concentrating on the anchor blades.

Inasmuch as anchors are placed for holding power not only under ordinary conditions, but in emergency cases, it would seem that this anchor, which has the greatest holding power and ability to absorb strain, should appeal to you, and any other consideration, such as first cost or method of expansion should be relegated to second place.

Comparison of expanded areas of Oshkosh Anchors with other makes:

	4 in. size	6 in. size	8 in. size	
Oshkosh, expanded.....	11 in.	16½ in.	22 in.	in 4 ways
Other makes, expanded.....	.....	11 in.	15 in.	in 2 ways only
No. 934. 4 inch size, wt. 5¼ lbs.....				each \$0.85
No. 936. 6 inch size, wt. 11 lbs.....				“ 1.00
No. 938. 8 inch size, wt. 20 lbs.....				“ 1.50

FOR ANCHOR RODS, GALVANIZED STRAND AND ROPE FITTINGS, SEE INDEX

POST OR SEWER DIGGERS' MAULS

BARK COVERED

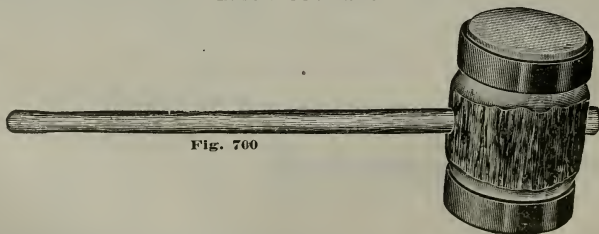


Fig. 700

With extra selected hickory handles, clear through head. Handle has enlarged, or swelled end, making it impossible for maul head to come off.

Mauls are bark covered; ends are bound with extra heavy forged rings.

Sizes, inches.....	7x9	6x12	7x12
Price each.....	\$3.50	3.90	4.30

POST OR SEWER DIGGERS' MAUL HANDLES

Extra handles for above Mauls.....per doz. \$5.00

FOR IRON MAULS, SEE INDEX



Fig. 1609-20
Galvanized finish.

GENUINE KLEIN ELECTRICAL CONSTRUCTION TOOLS

GENUINE KLEIN'S "COME LONG" GRIP

No.	Size	Weight per doz.	Price per doz.
1609-20.	For No. 8 wire and smaller.....	12 lbs.	\$ 8.00
1609-30.	For No. 6 wire and smaller.....	24 lbs.	10.00
1609-40.	For No. 0 wire and smaller.....	27 lbs.	12.00

GENUINE KLEIN'S IMPROVED HAVEN'S GRIP

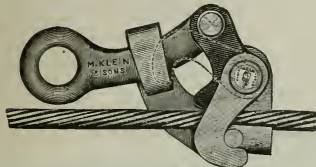


Fig. 1625-20

No.	Weight per doz.	Price per doz.
1625-20.....	69 lbs.	\$55.75

Improved Klein Haven's Grip adapted for handling plain or stranded wire from No. 6 to ¼ inch in diameter.

The particular feature of construction is the addition of a swing latch which engages with stud on the lower jaw, this centralizes the pressure on the cross-bolt, which is strongly made of turned machined steel. The body and handle of this clamp are made of steel forging and the eccentric of hardened steel. This tool is the outgrowth of a demand for a clamp to accommodate larger than ½ inch wire cable.

GENUINE KLEIN'S "CHICAGO GRIP"

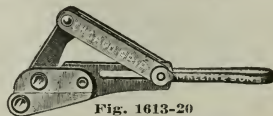


Fig. 1613-20

No.	Size	Weight each	Price each
1613-20.	For No. 10 wire and smaller.....	1 lb.	\$ 4.50
1613-30.	For No. 6 wire and smaller.....	1½ lb.	5.00
1613-40.	For No. 0 wire and smaller.....	2½ lbs.	8.00
1613-50.	For No. 0000 wire and smaller.....	7½ lbs.	12.00

The Chicago Grip is made entirely of steel. The main body piece and lever are steel, drop forged. The draw parts are wrought steel. The gripping jaws are machined smooth. Rivets are machine turned and the workmanship throughout is first class. The grip was designed primarily for use on copper wire but will work equally well on iron or steel wire. It pulls straight without leaving kinks in the wire. It is handy to put on and holds itself in place by a spring actuating on the compressing lever. Use this grip on your most exacting work.

KLEIN'S COMMON PAY-OUT REEL



Fig. 4600-1

KLEIN'S PAY-OUT REEL ON BARROW

LIGHT REEL—For Telephone Work

No.	Weight each	Price each
4601-1.....	80 lbs.	\$16.00

Constructed of hard wood and reinforced with steel plates. The barrow is supported by substantially made steel legs side braced and bolted through the wood. Built to stand hard usage. Guard Pins are adjustable for 12 inch, 18 inch or 24 inch Coils.

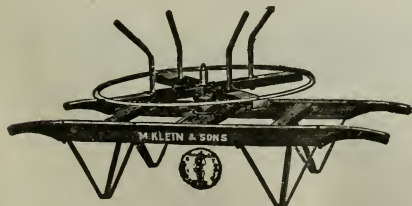


Fig. 4601-2

No.	Weight each	Price each
4600-1.....	40 lbs.	\$10.00

Substantially built of hard wood and reinforced with steel plates. A good reel for the repair wagon.

We also furnish reel spools with turnpin and disk, without base, for wagon reels or for multiple stringing. Guard Pins are adjustable for 12 inch, 18 inch or 24 inch Coils.

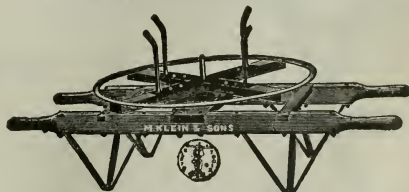


Fig. 4601-1

HEAVY REEL For Electric Light Work

No.	Weight each	Price each
4601-2.....	90 lbs.	\$20.00

All wood parts are made of oak mortised and bolted together and reinforced with steel plates. Carried on strong well braced legs bolted through the wood. The guard pins are adjustable for 12 inch, 18 inch or 24 inch Coils. Built to stand hard usage.

FOR OTHER ELECTRICAL TOOLS, SEE INDEX

DIGGING BARS

Our bars are all hand-made of specially selected crucible steel.

It is a waste of money to purchase cheap bars, for they will bend or break on the first hard job; or, if they are too brittle, the digging blade will chip off. The steel that goes into our bars is rolled for just this purpose and the small additional cost to the user is more than justified by the additional service derived.

CROW AND DIGGING BARS



Fig. 1060

Order by number

No. 1060.	1	inch octagon,	6 foot long, weight 17 lbs.	.....each	\$2.70
No. 1061.	1	inch octagon,	7 foot long, weight 20 lbs.	.....each	3.00
No. 1062.	1	inch octagon,	8 foot long, weight 23 lbs.	.....each	3.30
No. 1063.	1½	inch octagon,	6 foot long, weight 22 lbs.	.....each	3.60
No. 1064.	1½	inch octagon,	7 foot long, weight 26 lbs.	.....each	3.90
No. 1065.	1½	inch octagon,	8 foot long, weight 30 lbs.	.....each	4.25

TAMPING AND DIGGING BARS

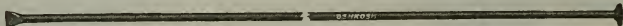


Fig. 1070

Order by number

No. 1070.	1	inch octagon,	6 foot long, weight 17 lbs.	.....each	\$3.30
No. 1071.	1	inch octagon,	7 foot long, weight 20 lbs.	.....each	3.60
No. 1072.	1	inch octagon,	8 foot long, weight 23 lbs.	.....each	3.80
No. 1073.	1½	inch octagon,	6 foot long, weight 22 lbs.	.....each	3.70
No. 1074.	1½	inch octagon,	7 foot long, weight 26 lbs.	.....each	4.00
No. 1075.	1½	inch octagon,	8 foot long, weight 30 lbs.	.....each	4.50

DIGGING SPUD WITH TAMPER



Fig. 852

Order by number

An especially fine all-steel digging and tamping tool. The handle is of steel pipe and the tamping head and blade are shrunk onto the handle, there being no possibility of either working loose. The blade and its socket are one piece of forged crucible steel.

No. 852. 9 foot long, weight 234 lbs. per doz., \$45.00

LOY OR SLICK



Fig. 853

Order by number

The most useful construction tool made for digging post holes. The handle is of 2-inch select maple and the blade is of tool steel 4 inch x ½ inch burned onto the handle and held by two large rivets. The blade being off to one side gives great leverage when prying. These can be had in any length not listed.

No. 853. 8 foot handle, weight 210 lbs. per doz., \$40.50

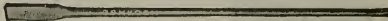
TAMPING BARS
With Heavy Iron Shoe

Fig. 854

Order by number

Made with select 2-inch maple handles with a 1½x¼-inch steel shoe securely riveted on them. A strong and serviceable tool.

No. 854.	7 foot handle, weight 150 lbs.	..... per doz.,	\$18.50
No. 855.	8 foot handle, weight 170 lbs.	..... per doz.,	20.00

Fig. 842 POLE SUPPORTS
Wooden Jenny Pole Supports

The 6-foot is made of 2-inch by 3-inch and the 7-foot and 8-foot of 2½-inch by 3½-inch rock maple, carefully selected. The entire support is heavily bolted and braced. The fork is of hand-forged crucible steel. These are light, strong and not expensive.

Order by number

No. 842.	6 foot, weight 39 lbs.	.....each	\$7.50
No. 843.	7 foot, weight 57 lbs.	.....each	8.25
No. 844.	8 foot, weight 62 lbs.	.....each	9.00

Fig. 842

FOR SHOVELS, PICKS, GRUB HOES AND MATTOCKS, SEE INDEX

BARS AND RAIL TONGS

RAIL TONGS



Fig. 1090

Weight about 17 lbs. Price, per pound..... \$0.30

RAIL FORKS



Fig. 1100

Weight about 15 lbs. Price per pound...\$0.25

SHACKLE BAR



Fig. 1160A

Size, 1½ inches in the square; length, 5 ft. 10 in.
Price each\$6.00

Special sizes made to order.

CROW—PINCH BAR



Fig. 1160. Wedge Point Crow Bar



Fig. 1161. Pinch Point Pinch Bar



Fig. 1150. Lining Bar

Crow, pinch, lining bars, steel, 12 lbs. to
50 lbs.per lb. \$0.12

For carpenters' goose neck, wrecking and small
crow, pinch and lining bars, see index.

CLAW BAR



Fig. 1120

Extra quality, weight about 28 lbs. per lb. \$0.22

GOOSE NECK CLAW BARS

Solid Cast Steel



Fig. 1130



Goose neck on one end, wedge point for start-
ing the board under spike, on the other.
Weight about 25 lbs. Price per pound...\$0.22

TAMPING BAR

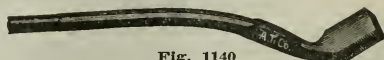


Fig. 1140

Weight about 14 lbs. Price per pound..\$0.06

POINTED DIGGING BARS



Fig. 1160C

Cast Steel. Price per pound.....\$0.35
Tool Steel. Price per pound..... .50
Weight of 1½ inch, octagon, 8 ft. long, 30 lbs.

DIGGING AND TAMPING BAR



Fig. 1161B

Cast Steel. Price per pound.....\$0.35
Tool Steel. Price per pound..... .50
Weight of 1½ inch, octagon, 8 ft. long, 30 lbs.

CARPENTER'S CLAW AND WRECKING BARS

HAMMER FORGED FROM OCTAGON TOOL STEEL

Properly Forged, Shaped, Ground and Tempered

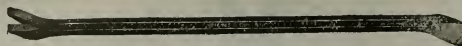


Fig. 544A. Claw and Bent Chisel End

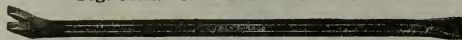


Fig. 544B. Claw and Straight Chisel End



Fig. 544C. Claw and Taper Round End

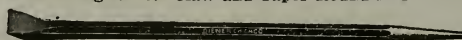


Fig. 544D. Bent Chisel and Taper Round End

Length	inches	18	21	24	30	36	36
Size of Octagon Steel.....		$\frac{5}{8}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	1
List per doz.		\$5.50	\$6.50	\$8.00	\$9.50	\$14.00	\$18.00

COMPOUND LEVER BARS

Properly shaped. Tempered ends. Hammer forged from Octagon Tool Steel.

FOR CARPENTERS, CAR BUILDERS, HOUSE WRECKERS AND GENERAL USE

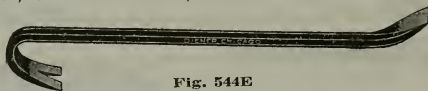


Fig. 544E

Length	inches	12	18	21	24	30	30	36	36
Size of Octagon Steel.....		$\frac{1}{2}$	$\frac{5}{8}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{7}{8}$	1
List per doz.		\$4.00	\$6.00	\$7.00	\$9.00	\$10.50	\$13.50	\$15.00	\$20.00

GOOSE NECK BARS

Made in Two Sizes. Hammer Forged from Octagon Tool Steel

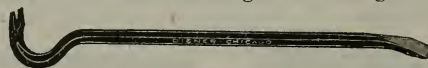
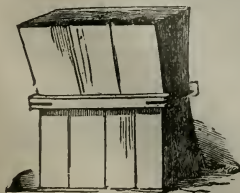


Fig. 544F

Length	inches	24	30	30
Size of Octagon Steel.....		$\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$
List per doz.		\$9.00	\$10.50	\$13.50

SHINGLES AND HEADING BANDS

Fig. 617
Pnt up in barrels, about
500 lbs.

ECONOMY BRAND

So called on account of being
the most economical brand made.
Tough and light weight.

Size inches	Estimate for 1,000,000 Shingles lbs.	Black per lb.	Jap'nd per lb.	Galv. per lb.
$\frac{1}{2}$ x 11	200	Lowest Market Price		
$\frac{1}{2}$ x 12	220			
$\frac{1}{2}$ x 13	242			
$\frac{1}{2}$ x 14	270			

STEEL BANDS

Size inches	Estimate for 1,000,000 Shingles lbs.	Black per lb.	Jap'nd per lb.	Galv. per lb.
11x $\frac{5}{8}$	300	Lowest Market Price		
12x $\frac{5}{8}$	330			
13x $\frac{5}{8}$	360			
14x $\frac{5}{8}$	400			
16x $\frac{5}{8}$...			
18x $\frac{5}{8}$	....		
20x $\frac{5}{8}$	....		

SCYTHES AND SICKLES

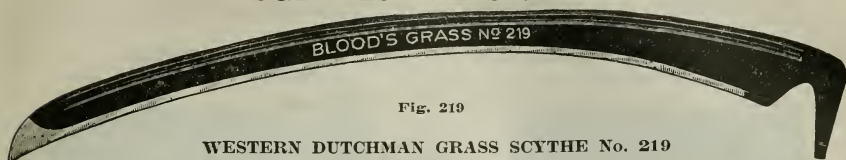


Fig. 219

WESTERN DUTCHMAN GRASS SCYTHE No. 219

Enameloid Finish, Cutting Edge Only Polished

Packed $\frac{1}{2}$ dozen in burlap bundles. Usual assortments to the dozen 28 to 32, 30 to 34, 32 to 36, 34 to 38, or 36 to 40 inches.

List, per dozen.....\$8.00

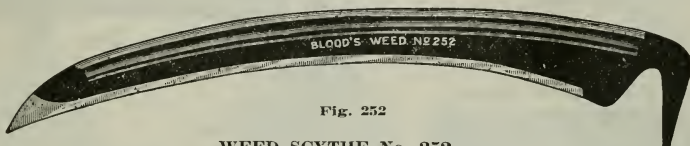


Fig. 252

WEED SCYTHE No. 252

Enameloid Finish, Edge of Back and Cutting Edge Polished

Packed in $\frac{1}{2}$ dozen burlap bundles. Usual assortments to the dozen 24 to 26, 26 to 28, or 28 to 30 inches.

List, per dozen.....\$8.25

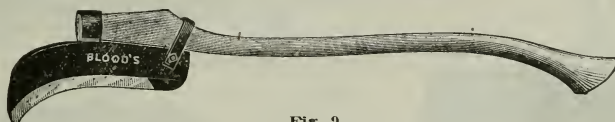


Fig. 9

STRAPPED EYE, HANDLED BUSH HOOK

Best Grade—Highest Quality

Forged tool steel, carefully tempered, well finished and properly handled. The blade is so shaped that it reinforces each part, making a strong tool throughout.

- No. 9. (Light) Strapped Eye. $1\frac{1}{4}$ lbs. not including weight of 32 inch axe handle.
- No. 10. (Medium) Strapped Eye. $2\frac{1}{4}$ lbs. not including weight of 34 inch axe handle.
- No. 11. (Heavy) Strapped Eye. 3 lbs. not including weight of 36 inch axe handle.
- No. 12. Two Ring Unhandled. $2\frac{3}{4}$ lbs.
- No. 112. Two Ring Unhandled. $1\frac{1}{4}$ lbs.

Packed one dozen in an open box.

No.	9	10	11	12	112
Shipping weight, per dozen.....	40 lbs.	46 lbs.	58 lbs.	40 lbs.	28 lbs.
List, per dozen.....	\$12.00	\$13.00	\$15.50	\$10.00	\$8.00

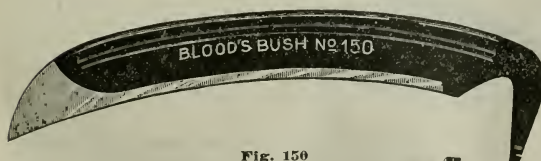


Fig. 150

BUSH SCYTHE No. 150

Enameloid Finish, Cutting Edge Only Polished

Packed in $\frac{1}{2}$ dozen burlap bundles. Usual assortments to the dozen 16 to 20, 18 to 22, or 20 to 24 inches.

List, per dozen.....\$8.25



Fig. 80

GRASS HOOK OR SICKLE

No. 80. Blood's "Champion"

Hand forged from tool steel of special shape that gives unusual strength and lightness. Has the correct bend. Enameloid finish. The tang goes entirely through the handle and is riveted fast over a washer.

No.	80	82
List, per dozen..	\$3.20	\$2.90

MAULS—WEDGES—REELS—BELLOWS

WOOD CHOPPER MAULS
Oregon Pattern

Fig. 556A

6 to 12 lbs.....per lb. \$0.36

Truckee Flared Bit Pattern

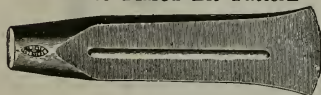


Fig. 556B

3 to 10 lbs.....per lb. \$0.36

Stone Axe With Teeth



Fig. 558A

Weight, lbs., each, 3 to 5.....per lb. \$0.60
 Weight, lbs. each, 5 and over... " .50

Stone Bush, Milled Teeth

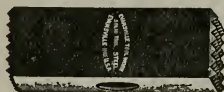


Fig. 558B

Weight, lbs., each, 3 to 6.....per lb. \$1.00

We can furnish any style and weight to order on short notice. Made in our own shop.

STAVE WEDGES

Dimensions of 4 Pound Size



Fig. 1020B

Head 2 x 1½ in.
 Length 8 in.
 Bit 3¼ in.
 Weight 3½ to 5 lb.
 Price per pound.....\$0.25

Round Bit furnished if specified.
 Square Head



Fig. 556C

3 to 10 lbs.....per lb. \$0.20

Mason's Reel



Fig. 558C

Weight, lbs., each, 4 to 8.....per lb. \$0.50

Calking Hammer



Fig. 558D

Weight, lbs., each, 2½, 3, 3½....each \$2.00

BELLOWS



Fig. 489

MOULDERS' BELLOWS

10 inches wide.....per doz. \$15.00
 12 inches wide....." 18.00
 14 inches wide....." 24.00

HAND BELLOWS—Same Style as Moulders'

6 inches.....per doz. \$10.00
 7 inches....." 11.00
 8 inches....." 12.00
 9 inches....." 13.00

FOR HANDLES TO FIT ABOVE TOOLS, SEE INDEX

STANDARD WOOD SHELL IRON STRAPPED BLOCKS

With Harcourt's Patent Straps, Iron Sheaves and Loose Hooks

Loose Side Hooks and Becket



Fig. 490

Single, with Becket

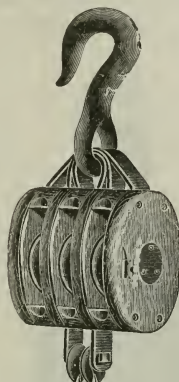


Fig. 492

Triple, with Becket

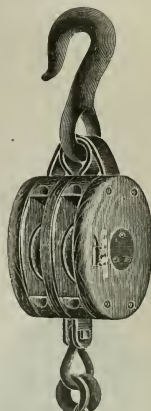


Fig. 491

Double, with Becket

In Ordering Specify Size of Shell and State if Becket is Wanted

Dimensions				With Common Bushed Iron Sheaves, each			With Patent Bushed Iron Sheaves, each		
Size Sheave inches	Mortise inches	For Diam. Rope, in.	Size Shell inches	Single	Double	Triple	Single	Double	Triple
1 3/4 x 1 1/2 x 3/8	1 1/8	3/8	3	\$0.70	\$1.30	\$1.75	\$1.10	\$2.00	\$2.90
2 x 1 1/2 x 3/8	1 1/8	3/8	3 1/2	.75	1.45	2.00	1.15	2.20	3.15
2 1/4 x 5/8 x 3/8	1 1/8	1/2	4	.85	1.60	2.15	1.20	2.25	3.25
3 x 3/4 x 3/8	7/8	5/8	5	.90	1.75	2.25	1.25	2.35	3.50
3 1/2 x 1 x 1/2	1	3/4	6	1.10	2.00	2.90	1.50	2.85	4.40
4 1/4 x 1 x 1/2	1 1/8	7/8	7	1.30	2.40	3.50	1.70	3.35	5.00
4 3/4 x 1 1/8 x 5/8	1 1/4	1	8	1.65	2.85	4.25	2.25	4.15	6.00
5 1/2 x 1 1/8 x 5/8	1 1/4	1	9	1.85	3.40	4.75	2.50	4.70	7.25
6 1/4 x 1 1/4 x 5/8	1 3/8	1 1/8	10	2.75	4.50	6.25	3.50	6.00	8.50
8 x 1 3/8 x 3/4	1 1/2	1 1/4	12	4.45	7.50	10.65	5.30	9.20	13.20
9 1/2 x 1 5/8 x 7/8	1 3/4	1 3/8	14	7.00	10.50	15.00	8.15	12.80	18.45
11 x 1 3/4 x 7/8	1 7/8	1 1/2	16	10.00	15.00	22.00	11.50	18.00	26.50

Dimensions				With Self-Lubricating, Bushed Sheaves		
Size Sheave inches	Mortise inches	For Diam. Rope, inches	Size Shell inches	Single	Double	Triple
2 1/4 x 5/8 x 3/8	1 1/8	1/2	4	\$1.50	\$2.90	\$4.15
3 x 3/4 x 3/8	7/8	5/8	5	1.75	3.35	4.75
3 1/2 x 1 x 1/2	1 1/8	3/4	6	2.20	4.00	5.80
4 1/4 x 1 x 1/2	1 1/8	7/8	7	2.50	4.50	6.70
4 3/4 x 1 1/8 x 5/8	1 1/4	1	8	3.25	5.70	8.50
5 1/2 x 1 1/8 x 5/8	1 1/4	1	9	3.70	6.75	10.00
6 1/4 x 1 1/4 x 5/8	1 3/8	1 1/8	10	4.75	8.50	12.50
8 x 1 3/8 x 3/4	1 1/2	1 1/4	12	6.75	12.50	18.50
9 1/2 x 1 5/8 x 7/8	1 3/4	1 3/8	14	9.75	17.00	25.00
11 x 1 3/4 x 7/8	1 7/8	1 1/2	16	14.00	24.00	34.00

FOR EXTRA SHEAVES, SEE INDEX

CONTRACTORS' BLOCKS

With Extra Heavy Flattened Loose Hooks or Shackles. Cross Bolted Shells

The Sheaves in These Blocks are all Galvanized

In Ordering Specify Size of Shell and State if Becket is Wanted

Single

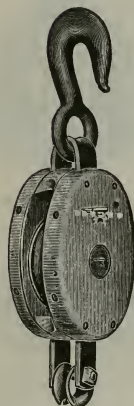


Fig. 546

Double

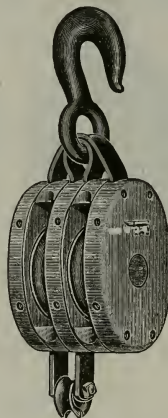


Fig. 547

Triple



Fig. 548

SPECIAL CONTRACTORS' HEAVY WOOD SHELL BLOCKS

With Heavy Flattened Hooks

Can furnish with shackles if desired. On account of its rigid construction and moderate cost, this block is becoming almost universal with the contracting trade.

Dimensions			Self-Adjusting Five-Roller Bushed			Phosphor Bronze or Metalline Bushed, Self- Lubricating		
Size Sheave inches	For Diam. Rope inches	Length Shell inches	Single each	Double each	Triple each	Single each	Double each	Triple each
3 x $\frac{3}{4}$ x $\frac{3}{8}$	$\frac{5}{8}$	5	\$1.25	\$ 2.35	\$ 3.50	\$1.75	\$ 3.35	\$ 4.75
3 $\frac{1}{2}$ x 1 x $\frac{1}{2}$	$\frac{3}{4}$	6	1.50	2.85	4.40	2.20	4.00	5.80
4 $\frac{1}{4}$ x 1 x $\frac{1}{2}$	$\frac{7}{8}$	7	1.70	3.35	5.00	2.50	4.50	6.70
4 $\frac{3}{4}$ x 1 $\frac{1}{2}$ x $\frac{5}{8}$	1	8	2.25	4.15	6.00	3.25	5.70	8.50
5 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{5}{8}$	1	9	2.50	4.70	7.25	3.70	6.75	10.00
6 $\frac{1}{4}$ x 1 $\frac{1}{4}$ x $\frac{5}{8}$	1 $\frac{1}{8}$	10	3.50	6.00	8.50	4.75	8.50	12.50
8 x 1 $\frac{3}{8}$ x $\frac{3}{4}$	1 $\frac{1}{4}$	12	5.30	9.20	13.20	6.75	12.50	18.50
9 $\frac{1}{2}$ x 1 $\frac{5}{8}$ x $\frac{7}{8}$	1 $\frac{3}{8}$	14	8.15	12.80	18.45	9.75	17.00	25.00

FOR EXTRA SHEAVES, SEE INDEX

HEAVY THICK MORTISE WOOD SHELL IRON STRAPPED BLOCKS

Harcourt's Patent

For Manila Rope

With Extra Heavy Loose Side Hooks and Straps. Double Cross Bolted Shells
Hooks Flattened When so Ordered

Single

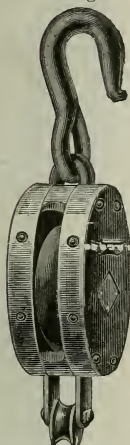


Fig. 552

Double

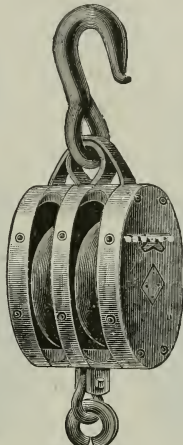


Fig. 553

Triple



Fig. 554

These Blocks are Adapted for Railroads, Mining, Bridge Building and Contractors' Work

The five-roller bushed blocks are the strongest roller bushed blocks made. We recommend our self-lubricating bushed blocks for heavy and rapid work. The bushing is the life of the block and the extra cost of the metaline bushed sheaves is more than repaid by increased life to the block.

Can Furnish with Shackles. Prices on Application

In ordering specify size of Shell and state if becket is wanted.

Dimensions			Iron Bushed			Improved Roller Bushed			Phosphor Bronze or Metaline Brushed, Self-Lubricating		
Size Sheave inches	For Dia. Rope inches	Length Shell inches	Single each	Double each	Triple each	Single each	Double each	Triple each	Single each	Double each	Triple each
3 1/2 x 1 x 1 1/2	3/4	6	\$2.00	\$3.50	\$5.00	\$2.75	\$5.00	\$7.25	\$4.00	\$7.00	\$9.00
4 x 1 1/2 x 1 1/2	1	7	2.25	4.00	5.50	3.00	5.50	7.75	4.25	7.30	10.00
4 1/2 x 1 1/2 x 1 1/2	1 1/8	8	2.75	4.50	6.30	3.50	6.00	8.55	5.00	9.00	13.00
5 1/2 x 1 1/2 x 1 1/2	1 1/4	9	3.15	5.25	7.25	4.00	6.95	9.80	5.75	10.50	15.00
6 1/2 x 1 1/2 x 1 1/2	1 1/2	10	4.00	6.50	9.00	5.25	9.00	12.25	7.25	13.50	19.00
7 x 1 1/2 x 1 1/2	1 3/4	11	5.25	8.50	12.50	6.50	11.00	16.25	9.25	17.00	25.00
8 x 1 1/2 x 1 1/2	1 7/8	12	5.25	8.50	12.50	6.50	11.00	16.25	9.25	17.00	25.00
9 x 1 1/2 x 1 1/2	2	13	8.00	13.00	17.00	9.75	16.50	22.25	13.00	23.50	33.00
9 1/2 x 1 1/2 x 1 1/2	2 1/8	14	8.00	13.00	17.00	9.75	16.50	22.25	13.00	23.50	33.00
10 x 1 1/2 x 1 1/2	2 1/4	15	9.00	15.00	20.00	11.00	19.00	26.00	15.00	26.50	37.00
11 x 2 1/4 x 1	2	16	11.50	18.00	28.00	14.00	23.00	35.50	18.00	32.00	45.00

We Furnish Becket in All Single, One-Half, Double and One-Third Triple Blocks, Without Charge

WOOD SHELL IRON STRAPPED SNATCH BLOCKS

STEEL SHELL SNATCH BLOCKS

FOR MANILA ROPE

Drop Link

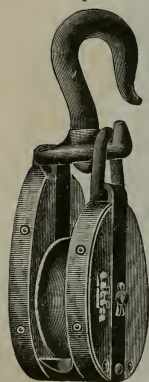


Fig. 603

Bail

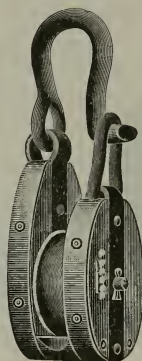


Fig. 605

Drop Link



Fig. 607

Ball



Fig. 609

The Heads and Links of these Blocks are Drop Forged, Furnished with Flattened Hooks When Desired

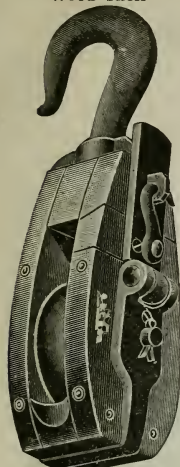
Edges of Steel Block Shells nicely rounded

In Ordering Specify Size of Shell

Size Sheave inches	For Diam. Rope inches	Length Shell inches	Iron Bushed each	Improved Roller Bushed each	Phosphor Bronze or Metaline Bushes, each
3 x 1 1/8 x 1/2	3/8	6	\$ 4.00	\$ 4.65	\$ 5.25
3 1/2 x 1 1/4 x 1/2	7/8	7	4.75	5.50	6.00
4 1/2 x 1 3/8 x 5/8	1	8	5.75	6.60	7.25
5 x 1 3/8 x 5/8	1 1/8	9	6.75	7.75	8.50
5 3/4 x 1 7/8 x 3/4	1 1/4	10	8.50	10.00	11.00
6 3/4 x 2 1/8 x 3/4	1 1/2	12	10.00	11.50	13.00
8 x 2 1/4 x 7/8	1 3/4	14	13.00	15.00	16.50
9 x 2 5/8 x 1	2	16	17.00	20.00	22.00
10 x 3 x 1 1/8	2 1/4	18	25.00	28.50	31.00
11 x 3 1/2 x 1 1/4	2 1/2	20	38.00	43.00	46.00
11 3/4 x 4 1/4 x 1 1/2	3	22	55.00	63.00	68.00
12 1/2 x 4 1/2 x 1 1/2	3 1/2	24	70.00	78.00	86.00
14 x 4 3/4 x 1 3/4	4	26	90.00	....	110.00

FOR EXTRA SHEAVES, SEE INDEX

Wood Shell


Fig. 614
Double

EXTRA HEAVY OUTSIDE IRON STRAPPED SNATCH BLOCKS

For Manila Rope

These Extra Heavy Blocks are made throughout in the best possible manner. Every detail, from the selection of the materials to the workmanship and finish, has been given the most careful attention.

Flattened Swivel Hooks. Phosphor Bronze. Self lubricating bushed. Favorite with Bridge Builders and General Contractors.

In Ordering Specify Size of Shell

Sheave, inches	Dia. Rope inches	Shell inches	Price each
4 1/4 x 1 x 5/8	3/4	10	\$8.55
5 x 1 1/4 x 3/4	1	11	9.35
5 x 1 1/2 x 7/8	1 1/4	12	9.75
6 1/2 x 1 3/4 x 1	1 1/2	14	12.00
7 1/4 x 2 x 1 1/8	1 3/4	15 1/2	17.50
8 x 2 1/2 x 1 1/4	2	16 1/2	19.00
9 x 3 x 1 1/2	2 1/2	18	24.00
10 x 3 1/2 x 1 3/4	3	21	35.00

Steel Shell



Fig. 615



Fig. 567

EXTRA HEAVY EXTRA THICK MORTISE IRON STRAPPED BLOCKS

HARCOURT'S PATENT

For Railroad Wrecking Cars
Contractors' and Steamboat Use
With Lashing Shackles

For Manila Rope

In ordering specify size of Shell, and
state if Becket is wanted

Triple



Fig. 568

Dimensions			Iron Bushed			Improved Roller Bushed		
Size Sheave inches	For Dia. Rope inches	Length Shell inches	Single each	Double each	Triple each	Single each	Double each	Triple each
11 x 2 1/4 x 1	2	16	\$12.50	\$23.00	\$35.00	\$15.00	\$28.00	\$43.00
12 x 2 5/8 x 1 1/2	2 1/4	18	15.00	29.00	42.00	18.00	35.00	52.00
13 1/2 x 2 3/4 x 1 1/4	2 1/2	20	21.00	37.00	54.00	25.00	45.00	65.00
14 1/2 x 3 x 1 1/2	3	22	26.00	48.00	70.00	35.00	65.00	95.00
15 1/2 x 3 3/8 x 1 1/2	3 1/2	24	32.00	56.00	84.00	43.00	80.00	120.00
17 x 4 x 1 3/4	4	26	65.00	95.00	140.00	....	....	....

Phosphor Bronze or Metaline Self-Lubricating Bushed

Length Shell inches	Single	Double	Triple	Fourfold
16	\$18.00	\$35.00	\$51.00	\$69.00
18	23.00	44.00	63.00	86.00
20	32.00	54.00	77.00	109.00
22	38.00	70.00	100.00	138.00
24	46.00	85.00	125.00	171.00
26	75.00	115.00	170.00	245.00

Above Blocks fitted with Rings when so preferred.

CARPENTER PERFECT METAL BLOCKS

Pressed Steel. Indestructible

With Loose Side Hooks

For Manila Rope

Single

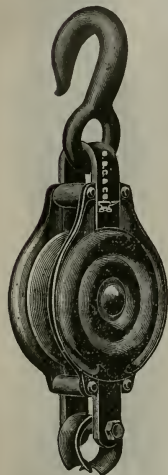


Fig. 583

Double

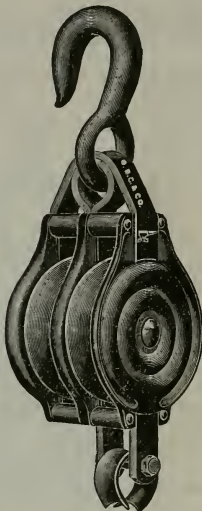


Fig. 584

Triple



Fig. 585

The outer edges of middle partitions, as well as the sides of shell are specially rounded to protect the rope. Both outside and middle straps extend full length of shell. Standard size sheaves are used in these Blocks. Becket are furnished on all singles, $\frac{1}{2}$ doubles and $\frac{1}{3}$ triples without charge.

In Ordering Specify Size of Shell and State if Becket is Wanted

Dimensions			Iron Bushed			Improved Roller Bushed			Phosphor Bronze Bushed, Self-Lubricating		
Size Sheave, inches	For Diam. Rope inches	Length Shell inches	Single each	Double each	Triple each	Single each	Double each	Triple each	Single each	Double each	Triple each
1 $\frac{3}{8}$ x $\frac{1}{2}$ x $\frac{1}{4}$	$\frac{7}{8}$	2 $\frac{1}{2}$	\$0.45	\$0.80	...	...	...	...	...	...	...
1 $\frac{3}{4}$ x $\frac{1}{2}$ x $\frac{3}{8}$	$\frac{3}{4}$	3	.70	1.30	\$1.75	\$1.10	\$2.00	\$2.90	...	...	...
2 x $\frac{3}{8}$ x $\frac{1}{2}$	$\frac{1}{2}$	3 $\frac{1}{2}$	.75	1.45	2.00	1.15	2.20	3.15	\$1.50	\$2.90	\$4.15
2 $\frac{1}{4}$ x $\frac{5}{8}$ x $\frac{3}{8}$	$\frac{1}{2}$	4	.85	1.60	2.15	1.20	2.25	3.25	1.75	3.35	4.75
3 x $\frac{3}{4}$ x $\frac{3}{8}$	$\frac{5}{8}$	5	.90	1.75	2.25	1.25	2.35	3.50	2.20	4.00	5.80
3 $\frac{1}{2}$ x 1 x $\frac{1}{2}$	$\frac{3}{4}$	6	1.10	2.00	2.90	1.50	2.85	4.40	2.50	4.50	6.70
4 $\frac{1}{4}$ x 1 x $\frac{1}{2}$	$\frac{7}{8}$	7	1.30	2.40	3.50	1.70	3.35	5.00	3.25	5.70	8.50
4 $\frac{3}{4}$ x 1 $\frac{1}{2}$ x $\frac{5}{8}$	1	8	1.65	2.85	4.25	2.25	4.15	6.00	3.70	6.75	10.00
5 $\frac{1}{2}$ x 1 $\frac{3}{8}$ x $\frac{5}{8}$	1 $\frac{1}{8}$	9	1.85	3.40	4.75	2.50	4.70	7.25	4.75	8.50	12.50
6 $\frac{1}{4}$ x 1 $\frac{1}{2}$ x $\frac{3}{4}$	1 $\frac{1}{4}$	10	2.75	4.50	6.25	3.50	6.00	8.50	6.75	12.50	18.50
7 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{3}{4}$	1 $\frac{3}{8}$	12	4.45	7.50	10.65	5.30	9.20	13.20	9.75	17.00	25.00
8 $\frac{1}{2}$ x 1 $\frac{7}{8}$ x $\frac{3}{4}$	1 $\frac{1}{2}$	14	7.00	10.50	15.00	8.15	12.80	18.45	...	...	...

FOR EXTRA SHEAVES, SEE INDEX

CARPENTER PERFECT METAL BLOCKS

Pressed Steel. Indestructible

With Shackles

For Manila Rope

Single

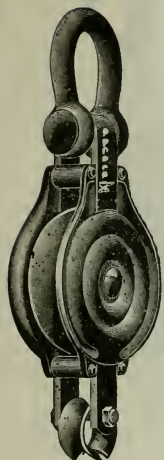


Fig. 586

Double

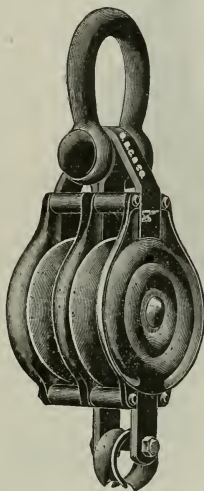


Fig. 587

Triple

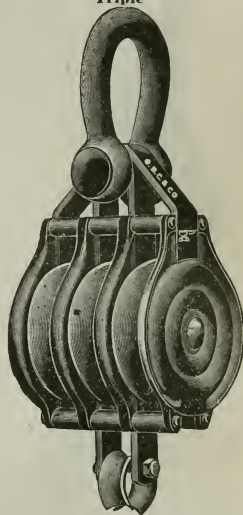


Fig. 588

These Blocks are constructed the same as those on the preceding page, except that same have shackles instead of hooks.

In Ordering Specify Size of Shell and State if Becket is Wanted

Dimensions			Iron Bushed			Improved Roller Bushed			Phosphor Bronze Bushed, Self-Lubricating		
Size Sheave inches	For Diam. Rope, inches	Length Shell inches	Single each	Double each	Triple each	Single each	Double each	Triple each	Single each	Double each	Triple each
1 3/4 x 1 1/8 x 1/4	7/8	2 1/2	\$0.45	\$0.80	...	...	...	...	...	...	...
1 3/4 x 1 1/8 x 3/8	3/8	3	.70	1.30	\$1.75	\$1.10	\$2.00	\$2.90	...	...	...
2 x 1 1/8 x 1/2	1/2	3 1/2	.75	1.45	2.00	1.15	2.20	3.15	\$1.50	\$2.90	\$4.15
2 1/4 x 1 1/8 x 3/8	1/2	4	.85	1.60	2.15	1.20	2.25	3.25	1.75	3.35	4.75
3 x 1 1/8 x 3/8	5/8	5	.90	1.75	2.25	1.25	2.35	3.50	2.20	4.00	5.80
3 1/2 x 1 1/8 x 3/8	3/4	6	1.10	2.00	2.90	1.50	2.85	4.40	2.50	4.50	6.70
4 1/4 x 1 1/8 x 3/8	7/8	7	1.30	2.40	3.50	1.70	3.35	5.00	3.25	5.70	8.50
4 3/4 x 1 1/8 x 3/8	1	8	1.65	2.85	4.25	2.25	4.15	6.00	3.70	6.75	10.00
5 1/2 x 1 1/8 x 3/8	1 1/8	9	1.85	3.40	4.75	2.50	4.70	7.25	4.75	8.50	12.50
6 1/4 x 1 1/8 x 3/8	1 1/4	10	2.75	4.50	6.25	3.50	6.00	8.50	6.75	12.50	18.50
7 1/2 x 1 1/8 x 3/8	1 3/8	12	4.45	7.50	10.65	5.30	9.20	13.20	9.75	17.00	25.00
8 1/2 x 1 1/8 x 3/8	1 1/2	14	7.00	10.50	15.00	8.15	12.80	18.45	...	...	...

FOR EXTRA SHEAVES, SEE INDEX

CARPENTER IMPROVED STEEL TACKLE BLOCKS

With Loose Side Hooks. Thick Mortise
For Manila Rope

Single



Fig. 577

Double



Fig. 578

Triple

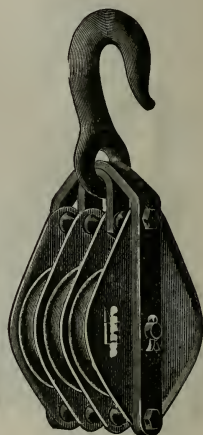


Fig. 579

An improved heavy plate Steel Block, built for rough usage.

Hooks and Straps are Forged Steel, and edges of Shells are nicely rounded to protect rope. Blocks have a fine black japan finish.

In Ordering Specify Size of Shell and State if Becket is Wanted

Dimensions			Iron Bushed			Improved Roller Bushed			Phosphor Bronze or Meteline Bushed, Self-Lubricating		
Diam. Sheaves, inches	For Dia. Rope inches	Length Shell inches	Single each	Double each	Triple each	Single each	Double each	Triple each	Single each	Double each	Triple each
2 1/4	1 1/2	4	\$0.90	\$1.75	\$2.50	\$1.40	\$2.60	\$3.75	\$1.65	\$3.25	\$4.75
3	5/8	5	1.00	1.90	2.75	1.50	2.90	4.25	1.80	3.50	5.15
3 1/2	3/4	6	1.25	2.25	3.25	1.75	3.25	4.75	2.10	4.00	5.80
4 1/4	7/8	7	1.50	2.70	4.00	2.10	3.85	5.80	2.45	4.60	6.85
4 3/4	1	8	1.85	3.20	4.75	2.55	4.60	6.85	2.90	5.30	7.90
5 1/2	1 1/8	9	2.40	4.00	5.50	3.20	5.60	7.90	3.55	6.30	9.00
6 1/4	1 1/4	10	3.10	5.10	7.00	4.05	7.00	9.85	4.40	7.70	11.00
8	1 1/2	12	5.00	8.25	11.75	6.00	10.35	14.90	6.45	11.15	16.00
9 1/2	1 3/4	14	7.50	11.75	16.50	8.75	14.25	20.25	9.10	15.00	21.30
11	2	16	13.00	21.00	32.00	14.00	24.00	35.00	15.00	25.00	38.00
12	2 1/4	18	22.00	35.00	50.00	.....	.....	.....	25.00	41.00	59.00
13 1/2	2 1/2	20	30.00	50.00	65.00	.....	.....	.....	34.00	58.00	77.00

Sheaves in 8 inch Blocks and smaller are same sizes as in Regular Wood Blocks. See index.
Sheaves in 9 inch Blocks and larger are same sizes as in Thick Mortise Blocks. See index.

CARPENTER IMPROVED STEEL TACKLE BLOCKS

Extra Wide Mortise

With Shackles

For Manila Rope

Single

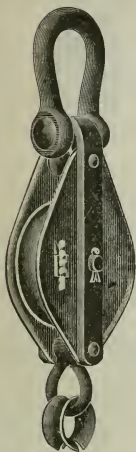


Fig. 580

Double

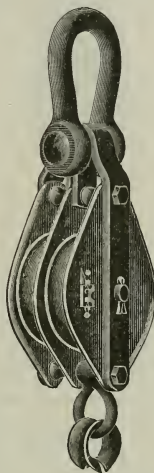


Fig. 581

Triple

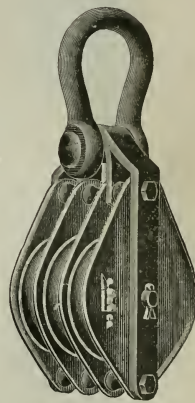


Fig. 582

An improved heavy plate Steel Block; extra wide mortise to prevent rope from "binding" in wet weather.

Can Furnish in any Capacity. Price on Application

In Ordering Specify Size of Shell and if Becket is Wanted

Dimensions			Iron Bushed			Phosphor Bronze or Metaline Bushed, Self-Lubricating		
Size Sheave, inches	For Diam. Rope inches	Length Shell Inches	Single each	Double each	Triple each	Single each	Double each	Triple each
4 $\frac{3}{4}$ x 1 $\frac{1}{4}$ x $\frac{5}{8}$	1	8	\$2.75	\$4.50	\$6.30	\$3.85	\$6.70	\$9.60
5 $\frac{1}{2}$ x 1 $\frac{3}{8}$ x $\frac{5}{8}$	1 $\frac{1}{8}$	9	3.15	5.25	7.25	4.40	7.75	11.00
6 $\frac{1}{4}$ x 1 $\frac{1}{2}$ x $\frac{3}{4}$	1 $\frac{1}{4}$	10	4.00	6.50	8.50	5.50	9.50	13.00
8 x 1 $\frac{5}{8}$ x $\frac{3}{4}$	1 $\frac{1}{2}$	12	6.25	10.25	15.00	7.85	13.50	20.00
9 $\frac{1}{2}$ x 1 $\frac{7}{8}$ x $\frac{7}{8}$	1 $\frac{3}{4}$	14	9.00	15.00	20.00	11.00	19.00	26.00
11 x 2 $\frac{1}{4}$ x 1	2	16	13.00	21.00	32.00	15.50	26.00	39.50
12 x 2 $\frac{5}{8}$ x 1 $\frac{1}{2}$	2 $\frac{1}{4}$	18	20.00	35.00	50.00	23.00	41.00	59.00
13 $\frac{1}{2}$ x 2 $\frac{7}{8}$ x 1 $\frac{1}{2}$	2 $\frac{1}{2}$	20	28.00	45.00	65.00	32.00	53.00	77.00
14 $\frac{1}{2}$ x 3 $\frac{3}{8}$ x 1 $\frac{1}{2}$	3	22	Prices quoted upon application. Name size Block and weight of load.					
15 $\frac{1}{2}$ x 3 $\frac{7}{8}$ x 1 $\frac{1}{2}$	3 $\frac{1}{2}$	24						
17 x 4 $\frac{1}{2}$ x 1 $\frac{3}{4}$	4	24						

Above Blocks fitted with rings instead of shackles, when so preferred.

FOR EXTRA SHEAVES, SEE INDEX

CARPENTER SPECIAL STEEL TACKLE BLOCKS

With Loose Side Hooks

For Manila Rope

For general use where Loads are light we recommend these Blocks.

They are lighter than Wood Blocks and equally strong. As there is no danger of shells splitting, they are more durable. They are japanned and baked hard, giving them a beautiful finish. Forged Steel Hooks, Straps, Pins and Shells. Straps extend full length of shell, giving strength and rigidity to the blocks, and furnishing proper support for Becketts. Shells have rounded edges to protect rope.



Fig. 571

Single with Becket



Fig. 572

Double with Becket



Fig. 573

Triple with Becket

In Ordering Specify Size of Shell and State if Becket is Wanted

Dimensions				With Common Bushed Iron Sheaves, each			With Patent Bushed Iron Sheaves, each		
Size Sheave inches	Mortise inches	For Diam. Rope, in.	Size Shell inches	Single	Double	Triple	Single	Double	Triple
1 3/4 x 1/2 x 3/8	3/8	3/8	3	\$0.70	\$1.30	\$1.75	\$1.10	\$2.00	\$2.90
2 x 1/2 x 3/8	3/8	3/8	3 1/2	.75	1.45	2.00	1.15	2.20	3.15
2 1/4 x 5/8 x 3/8	1/2	1/2	4	.85	1.60	2.15	1.20	2.25	3.25
3 x 3/4 x 3/8	7/8	5/8	5	.90	1.75	2.25	1.25	2.35	3.50
3 1/2 x 1 x 1/2	1	3/4	6	1.10	2.00	2.90	1.50	2.85	4.40
4 1/4 x 1 x 1/2	1 1/8	7/8	7	1.30	2.40	3.50	1.70	3.35	5.00
4 3/4 x 1 1/8 x 5/8	1 1/4	1	8	1.65	2.85	4.25	2.25	4.15	6.00
5 1/2 x 1 1/8 x 5/8	1 1/4	1	9	1.85	3.40	4.75	2.50	4.70	7.25
6 1/4 x 1 1/4 x 5/8	1 3/8	1 1/8	10	2.75	4.50	6.25	3.50	6.00	8.50
8 x 1 3/8 x 3/4	1 1/2	1 1/4	12	4.45	7.50	10.65	5.30	9.20	13.20
9 1/2 x 1 5/8 x 3/4	1 3/4	1 3/8	14	7.00	10.50	15.00	8.15	12.80	18.45
11 x 1 3/4 x 7/8	1 7/8	1 1/2	16	10.00	15.00	22.00	11.50	18.00	26.50

Dimensions				With Self-Lubricating, Bushed Sheaves		
Size Sheave, inches	Mortise inches	For Diam. Rope, in.	Size Shell inches	Single	Double	Triple
2 1/4 x 5/8 x 3/8	1/2	1/2	4	\$1.50	\$2.90	\$4.15
3 x 3/4 x 3/8	3/8	3/8	5	1.75	3.35	4.75
3 1/2 x 1 x 1/2	1 1/8	3/4	6	2.20	4.00	5.80
4 1/4 x 1 x 1/2	1 1/8	7/8	7	2.50	4.50	6.70
4 3/4 x 1 1/8 x 5/8	1 1/4	1	8	3.25	5.70	8.50
5 1/2 x 1 1/8 x 5/8	1 1/4	1	9	3.70	6.75	10.00
6 1/4 x 1 1/4 x 5/8	1 3/8	1 1/8	10	4.75	8.50	12.50
8 x 1 3/8 x 3/4	1 1/2	1 1/4	12	6.75	12.50	18.50
9 1/2 x 1 5/8 x 3/4	1 3/4	1 3/8	14	9.75	17.00	25.00
11 x 1 3/4 x 7/8	1 7/8	1 1/2	16	14.00	24.00	34.00

FOR EXTRA SHEAVES, SEE INDEX

"HARTZ" STEEL TACKLE BLOCKS

With Safety Link Hook



Fig. 1000
Single, with Becket



Fig. 1001
Double, with Becket



Fig. 1002
Triple, with Becket

We have been Selling Agents for these Blocks for over forty years, and know them to be among the first in quality and service. Special Attention is called to the Safety Link Hook. We can furnish these blocks with **STIFF SWIVEL HOOKS** or **GALVANIZED** at an advance in price.

REGULAR MORTISE

In Ordering Specify Size of Shell and State if Becket is Wanted

Size of Sheave	Diameter Rope	Length of Shell inches	Description	Plain Bushed		Steel Roller Bushed		Self-Lubricating Bushed	
				Blocks each	Sheaves each	Blocks each	Sheaves each	Blocks each	Sheaves each
2 1/4 x 1 1/8 x 3/8	1/2	4	Single	\$0.85		\$1.20		\$1.50	
			Double	1.60		2.25		2.90	
			Triple	2.15		3.25		4.10	
2 3/4 x 7/8 x 1/2	5/8	5	Single	.90		1.25		1.65	
			Double	1.75	.15	2.35	.65	3.25	.65
			Triple	2.25		3.50		4.50	
3 1/4 x 1 x 1/2	3/4	6	Single	1.10		1.50		1.95	
			Double	2.00	.25	2.85	.75	3.70	1.10
			Triple	2.90		4.40		5.45	
4 1/4 x 1 1/8 x 1/2	7/8	7	Single	1.30		1.70		2.25	
			Double	2.40	.33	3.35	.90	4.30	1.30
			Triple	3.50		5.00		6.35	
4 3/4 x 1 1/4 x 5/8	1	8	Single	1.65		2.25		2.75	
			Double	2.85	.40	4.15	1.10	5.05	1.45
			Triple	4.25		6.00		7.55	
5 1/2 x 1 1/2 x 1 1/8	1 1/8	9	Single	1.85		2.50		3.10	
			Double	3.40	.50	4.70	1.30	5.90	1.65
			Triple	4.75		7.25		8.50	
6 x 1 5/8 x 3/4	1 1/4	10	Single	2.75		3.50		4.15	
			Double	4.50	.65	6.00	1.60	7.30	1.95
			Triple	6.25		8.50		10.45	
7 1/2 x 1 3/4 x 7/8	1 3/8	12	Single	4.45		5.30		6.05	
			Double	7.50	.95	9.20	2.00	10.70	2.40
			Triple	10.65		13.20		15.45	
8 1/2 x 1 7/8 x 1	1 1/2	14	Single	7.00		8.15		8.85	
			Double	10.50	1.20	12.80	2.50	14.20	2.85
			Triple	15.00		18.45		20.55	

All the above Blocks larger than 8 inch are virtually Wide Mortise Blocks.

All Steel Roller Bushed Sheaves in blocks 6 inch and less have five roller bushed Sheaves. Larger have six roller bushed.

WROUGHT IRON GIN BLOCKS FOR MANILA ROPE

With Swivel Hooks

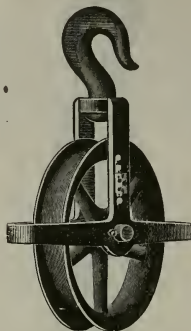


Fig. 600

In Ordering, Please Specify Diameter of Sheave

Diameter Sheave, inches	6	7	8	9	10	11	12	14	16	18	20	22
For Diameter Rope, inches	1	1	1	1	1	1	1	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2
Price, Iron Bushed, each	\$3.15	3.50	3.85	4.20	4.55	5.25	5.80	6.30	8.40	9.80	11.90	13.30
Price, Roller Bushed, each	\$4.00	4.40	4.70	5.40	5.75	6.55	7.10	7.60	9.70	11.10	13.00	14.40
Price, Self-Lubricating, each	\$4.75	5.15	5.50	6.20	6.55	7.35	7.90	8.50	10.70	12.10	14.00	15.50

WROUGHT IRON GIN ICE BLOCKS

Upper Block—Swivel Hook

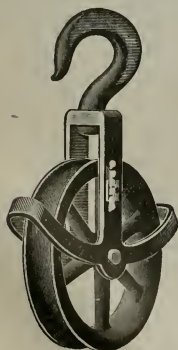


Fig. 601

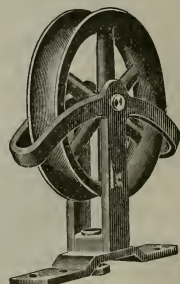
Lower Block
Iron Plate—Swivel

Fig. 602

FOR THE ICE TRADE

Strong Sheaves, Deep Grooves
Self-Lubricating BushedIn Ordering Specify
Diameter of Sheave

Diameter Sheave, inches	8	10	12	14	16
Price, Upper Block, each	\$5.00	6.00	7.50	9.00	10.50
Price, Lower Block, each	\$5.75	6.75	8.25	10.00	11.50

These blocks can be run at high speed without the use of oil, being self-lubricating, and are always ready for use.

FOR EXTRA SHEAVES, SEE INDEX

ANVIL BRAND IMPROVED METAL SNATCH BLOCKS

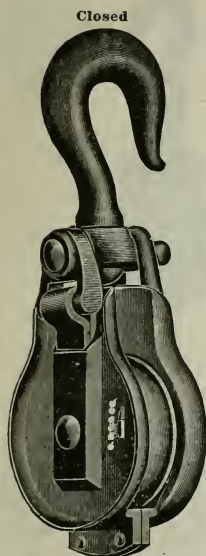


Fig. 611

For Manila Rope
Has a Positive Locking De-
vice, Drop Forged Hooks,
Heads and Links

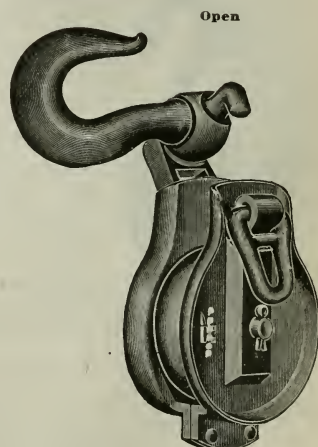


Fig. 612

This block has the safest and most easily operated locking device of any on the market.

Both sides of shell are same length—the inner surfaces being perfectly smooth and the outer edges being well rounded; there are no sharp or uneven points of contact to chafe the rope.

The sheave has a bearing at hub only and, as the edges cannot wear against side of block, the groove is kept perfect for the rope.

These blocks furnished with sheaves for Wire Rope, to order.

In Ordering Specify Size of Shell

Size Sheave, inches	For Dia. Rope inches	Length Shell inches	Self-Lubricating Iron Bushed each	Improved Roller Bushed each	Phosphor Bronze or Metaline Bushed, each
3 x 1 1/8 x 1/2	7/8	6	\$ 4.50	\$ 5.15	\$ 5.75
3 1/2 x 1 1/4 x 1/2	7/8	7	5.50	6.25	6.75
4 1/2 x 1 3/8 x 5/8	1	8	6.50	7.35	8.00
5 3/4 x 1 7/8 x 3/4	1 1/4	10	10.00	11.50	12.50
6 3/4 x 2 1/8 x 3/4	1 1/2	12	12.50	14.00	15.50
8 x 2 3/4 x 7/8	1 3/4	14	16.00	18.00	19.50
9 x 2 5/8 x 1	2	16	21.00	24.00	26.00

FOR EXTRA SHEAVES, SEE INDEX

STEEL LOADING AND LUMBERMEN'S BLOCKS



Fig. 1101

Loading Block
with
Stiff Swivel
Hook



Fig. 1102

Loading Block
with Grab
Hook Link
and Swivel Eye



Fig. 1103

Lumbermen's
Block with
Swivel Eye,
Loose Hook

Description		Plain Bushed Sheaves				Self-Lubricating Bushed Sheaves			
Size Sheave inches	Name of Block	Blocks with Rope Sheaves per dozen	Blocks with Chain Sheaves per dozen	Rope Sheave only per dozen	Chain Sheave only per dozen	Blocks with Rope Sheaves per dozen	Blocks with Chain Sheaves per dozen	Rope Sheave only per dozen	Chain Sheave only per dozen
5 1/8 x 1 5/8 x 5/8	Loading Blocks, with Stiff Swivel Hooks	\$22.50	\$24.30	\$7.20	\$9.00	\$30.00	\$33.00	\$18.00	\$21.00
5 1/8 x 1 5/8 x 5/8	Loading Blocks, with Grab Hook, Link and Swivel Eye...	30.00	31.80	7.20	9.00	37.50	40.50	18.00	21.00
5 1/8 x 1 5/8 x 5/8	Lumbermen's Blocks with Swivel Eye, loose Hook and Becket	30.00	31.80	7.20	9.00	37.50	40.50	18.00	21.00

IRON SHEAVES FOR CHAIN

Dimensions				Prices	Dimensions				Prices
Diam. inches	Thick- ness inches	Hole for Pin, Full Size inches	For Chain inches	Iron Bushed each	Diam. inches	Thick- ness inches	Hole for Pin, Full Size inches	For Chain inches	Iron Bushed each
5	1 5/8	5/8	3/8 and 7/8	\$0.80	10	2	1	7/8 and 1 1/2	\$2.80
6	1 1/2	3/4	1/2 " 3/8	.85	12	2 1/4	1	1 1/2 " 7/8	3.80
8	1 1/2	3/4	1/2 " 3/8	1.20	14	2 1/2	1 1/4	1 1/2 " 7/8	9.00
8	2	1	1/2 " 1/2	1.70	..	..	..	.....	...

NOTE:—We list only sizes carried in stock. Can furnish any size to order.

MISCELLANEOUS BLOCKS AND WHEELS

TEAM SNATCH BLOCK

For Wire Rope

Flatted Hook. Drop Forged Head. Steel Shell with edges nicely rounded to prevent cutting rope. Steel Straps. Steel Center Pin. In ordering specify size of Sheave.



Fig. 635

Size Sheave, in. 6x1x1	8x1 1/4 x1 1/8	10x1 1/2 x1 1/4
Lgth. Shell, in. 10	14	16
For diam. Wire Rope . . . in. 1/2	5/8	3/4
Weight . . . lbs. 13	24	42
Price, Iron Bushed, ea. \$6.00	8.00	11.00
Price, Bronze Bushed, ea. 7.00	9.50	13.00

RAILROAD BALLAST SNATCH BLOCKS

With Flattened Hook

Steel Shell. Chilled Groove Sheave. Phosphor Bronze Self Lubricating Bushed. Center Pin fastened with hex. nut and cotter key.

16 inch Shell, 9 inch diameter Sheave, 1 1/2 inch Center Pin for 1 1/2 inch diameter Wire Rope.

20 inch Shell, 12 inch diameter Sheave, 1 3/4 inch Center Pin for 2 inch diameter Wire Rope.

PRICES

Diam. Sheave inches	Shell For inches	Diam. Wire Rope inches	List Price
9	16	1 1/2	\$35.00
12	20	2	60.00

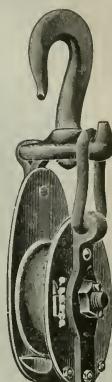


Fig. 618

ANTI-FRICTION WELL WHEELS

Patent Roller Bushed, for Light Hoisting

Diameter of wheel 12 inches; width of score, 1 1/4 inches.

No.	Description	Fig.	Price each	Sheave only
No. 1.	Roller bushed.	Fig. 1009	\$1.90	\$1.25
No. 2.	Roller bushed, heavy, with wrought iron strap.	Fig. 1010	2.75	1.40



Figs. 1009-1010

"HARTZ" SELF OILING STEEL HAY FORK BLOCKS

Steel Shell, Open Hearth Steel Swivel Ring, Iron Sheave (4 1/4 in. diam., 1 1/2 in. wide), mortise 1 3/4 in., plenty of head room. Edges of Shells are upset and turned out to prevent wear of rope. The chamber in Sheave can be filled with axle grease, tallow or oil, and then corked up. The lubricant feeds on the solid pin or axle, no matter in what position the Block is worked. It is the best self oiling device in the market.

Blocks	per doz.,	\$6.00
Sheaves	" "	3.60



Fig. 1008
Self-Oiling Hay
Fork Block

TELEGRAPH BLOCKS

Wood Shell Iron Strapped
With Eccentric

Size Shell inches	Common Bushed		Roller Bushed	
	Single	Double	Single	Double
3 1/2	\$1.50	\$2.00	\$1.70	\$2.50



Fig. 1007



Fig. 1006

For Sheaves for these Blocks, see Index

NEW STYLE CARGO HOISTING BLOCK

Stiff Swivel Hook

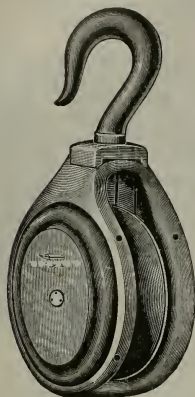


Fig. 642

For Stevedore Use

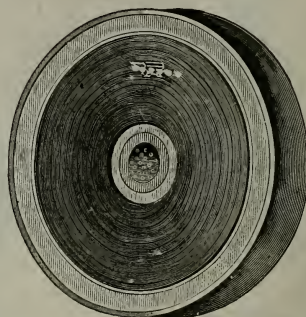


Fig. 642A

New Style Cargo Hoisting Block, with wooden cheeks, malleable iron frame (galvanized), wrought iron hook and strap, and fitted with New Style Sheave.

This block is circular in form, enabling us to use a sheave nearly same size as the block, which makes a saving of from two to three inches in length over other styles. The edges of frame are rounded to protect the rope.

New Style Metal Sheave, with lignumvitae projecting cheeks, and galvanized polished scores.

The projecting cheeks prevent the edges of the score of sheave from coming in contact with sides of the block, thereby keeping score of sheave perfect for the rope.

Above blocks furnished with sheaves to carry wire rope when so required. These sheaves are fitted with self-lubricating side bearings.

In Ordering Specify Size of Block.

Phosphor Bronze or Metaline Bushed, Self-Lubricating

Size Sheave, Inches	For Diam. Rope Inches	Size Block, inches	Price, each	Sheave, each
5 x1 1/8 x 5/8	7/8	6 1/2	\$ 5.00	\$2.15
5 1/2 x1 1/8 x 5/8	1	7 1/2	6.00	2.30
6 1/2 x1 3/8 x 3/4	1 1/8	8 1/2	8.00	3.00
7 1/2 x1 1/2 x 3/4	1 1/4	10	10.50	3.75
9 x1 5/8 x 3/4	1 1/2	11 1/2	13.00	4.00
10 x1 3/4 x 7/8	1 1/2	12 1/2	16.00	4.90
11 1/2 x1 7/8 x 7/8	1 1/2	14	20.00	6.25
13 1/2 x2 x1	1 3/4	16 1/2	26.00	8.00

Swivel Hook

METAL CARGO HOISTING BLOCK

All Metal Block, with Galvanized Malleable Iron Frame. Wrought Iron Hook and Strap, Galvanized Iron Sheave fitted with Self-Lubricating Side Bearings. Edges of Shell so turned as to prevent cutting the rope.

IN ORDERING, STATE WHETHER BLOCKS ARE TO CARRY MANILA OR WIRE ROPE

Style No. 644 furnished with round hooks when desired.

Phosphor Bronze or Metaline Bushed,
Self-Lubricating

Size Sheave inches	For Dia. Manila Rope inches	Size Block inches	Price each
8x1 $\frac{5}{8}$ x $\frac{3}{4}$	1 $\frac{1}{4}$	10	\$10.50
9x1 $\frac{5}{8}$ x $\frac{3}{4}$	1 $\frac{1}{4}$	11 $\frac{1}{2}$	13.00
10x1 $\frac{3}{4}$ x $\frac{7}{8}$	1 $\frac{1}{2}$	12 $\frac{1}{2}$	16.00
12x1 $\frac{7}{8}$ x $\frac{7}{8}$	1 $\frac{1}{2}$	14	20.00
14x1 $\frac{7}{8}$ x 1	1 $\frac{1}{2}$	17	26.00

FOR EXTRA SHEAVES, SEE INDEX

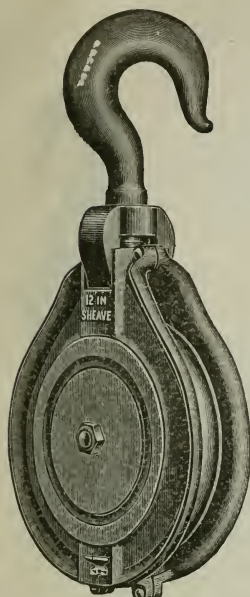


Fig. 644

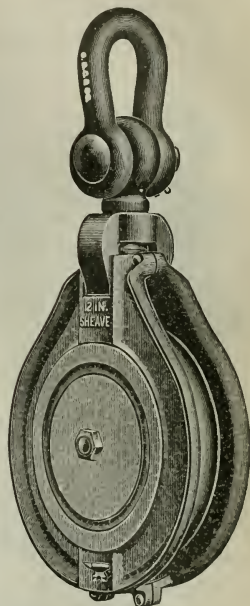


Fig. 645

Single

WROUGHT IRON BLOCKS FOR WIRE ROPE

With Graphite Bronze Bushed Sheaves

Oval Shell

With Loose Side Hooks

A Good Low Priced Derrick Block

In Ordering Specify Size of Sheave

Sheave Dimensions inches	Diam. Rope inches	Single	Double	Triple
6x1 x $\frac{3}{4}$	$\frac{3}{8}$	\$4.90	\$7.50	\$11.00
8x1 $\frac{1}{4}$ x $\frac{3}{4}$	$\frac{1}{2}$	5.25	9.50	14.00
10x1 $\frac{1}{4}$ x $\frac{7}{8}$	$\frac{5}{8}$	6.50	12.00	18.00
12x1 $\frac{1}{2}$ x 1	$\frac{5}{8}$	10.00	19.00	27.00
14x1 $\frac{1}{2}$ x 1 $\frac{1}{8}$	$\frac{3}{4}$	15.00	24.00	36.00

FOR EXTRA SHEAVES, SEE INDEX

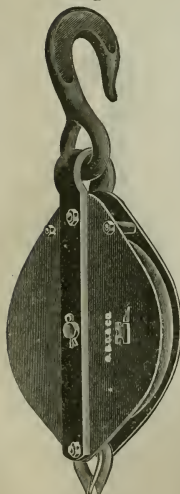


Fig. 680

Double

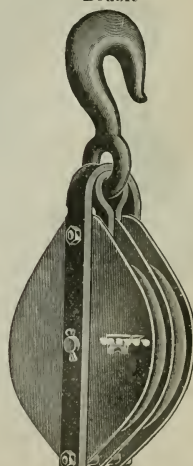


Fig. 681

"HARTZ" WIRE ROPE GIN BLOCKS

Stiff Swivel Hooks, Soft Steel Skeleton, Roller Guards
FOR WIRE ROPE

In Ordering Specify Size of Sheave and State
if Becket is Wanted

With Self Lubricating Graphite Bronze Bushed Sheaves

These Blocks require no oil, are made of best grades of steel, with turned steel pins and roller guards, guaranteeing perfect protection to the rope.

We can furnish these Blocks with Loose Safety Link Hooks, same list prices.



Fig. 1011
Single
with Becket

Dimensions		Each			
Diameter Sheave inches	For Dia. Rope inches	Single Fig. 1011	Double Fig. 1012	Triple Fig. 1013	Sheave only
10x1 3/4 x 1	1/2	\$11.00	\$18.00	\$28.00	\$4.00
12x1 3/4 x 1	5/8	12.50	20.00	31.00	6.00
14x2 x 1 1/8	3/4	15.00	23.00	36.00	7.75
16x2 x 1 1/4	7/8	18.00	27.00	46.00	9.00
18x2 3/8 x 1 1/4	1	23.00	32.00	53.00	10.90



Fig. 1012
Double
with Becket

"HARTZ" STEEL DERRICK AND HOISTING BLOCKS

FOR WIRE ROPE

In Ordering Specify Size of Sheave and State if
Becket is Wanted

With Self Lubricating Graphite Bronze Bushed Sheaves

These Blocks furnished with or without Steel Safety Link Hook. When the Block is used as a lower block in hoisting we send Guards (see list for extra cost), as they prevent the block from tipping over. All Blocks are drilled for the guards, so that they can be adjusted readily.

In ordering these Blocks, always specify Wire Rope Derrick Blocks, to avoid mistakes.
Can furnish with Stiff Swivel Hook at an advance in price



Fig. 1021
Single
with Becket and
Guards

Dimensions			Each				
Size Sheave inches	For Dia. Rope inches	Size Shell inches	Single Fig. 1021	Double Fig. 1022	Triple Fig. 1023	Sheave only	Guards per pair
6 x 1 1/4 x 5/8	1/4 and 3/8	9	\$4.50	\$7.50	\$11.00	\$1.75	\$1.60
9 1/2 x 1 1/2 x 3/4	3/8 " 1/2	12	6.50	12.00	18.00	3.00	1.60
10 1/2 x 1 3/8 x 7/8	1/2 " 5/8	13	8.00	15.00	22.00	3.75	1.60
12 x 2 x 1	5/8 " 3/4	16	10.00	19.00	27.00	7.00	1.60
14 x 2 1/8 x 1	3/4 " 1	18	15.00	24.00	36.00	8.00	1.60

Note extra for
Guards. If wanted,
specify.



Fig. 1022
Double
with Becket

WROUGHT IRON SNATCH BLOCKS FOR WIRE ROPE

In Ordering Specify Size of Sheaves

Drop Link

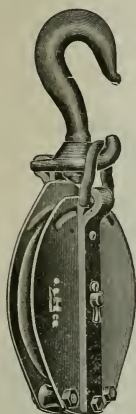


Fig. 722

Diameter Sheave inches	For Diameter Rope inches	Iron Bushed each	Phosphor Bronze, or Meteline Bushed, Self-Lubricating, each
6	$\frac{3}{8}$	\$11.00	\$12.00
8	$\frac{1}{2}$	14.00	15.00
10	$\frac{5}{8}$	16.00	18.00
12	$\frac{3}{4}$	18.00	21.00
14	$\frac{7}{8}$	20.00	24.00
16	$\frac{7}{8}$	28.00	33.00
18	1	38.00	44.00
20	$1\frac{1}{4}$	50.00	58.00
20	$1\frac{1}{2}$	70.00	78.00

Style No. 722 has semi-circular guard pressed in shell over sheave to prevent wire slipping between shell and sheave.

Style No. 723 has center extension piece coming close to the Sheave, preventing the wire rope from leaving the Sheave. It also prevents the Shell from binding or pinching the Sheave.

Self-Locking Clasp

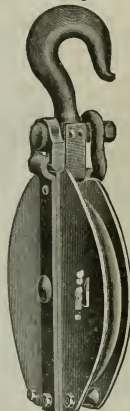


Fig. 723

"PERFECT" WIRE ROPE SNATCH BLOCK

In Ordering Specify Size of Sheaves

Closed



Fig. 726

Size Sheave inches	For Diam. Rope inches	Phosphor Bronze or Meteline Bushed each
8x1 $\frac{1}{4}$ x $\frac{7}{8}$	$\frac{1}{2}$	\$17.00
10x1 $\frac{1}{4}$ x 1	$\frac{5}{8}$	18.00
12x1 $\frac{1}{2}$ x 1 $\frac{1}{4}$	$\frac{5}{8}$	21.00
14x1 $\frac{1}{2}$ x 1 $\frac{1}{4}$	$\frac{3}{4}$	24.00
16x1 $\frac{3}{4}$ x 1 $\frac{1}{2}$	$\frac{7}{8}$	33.00

The heavy flatted Hook, the Head and the Straps are all of the best forged steel.

The Shell has nicely rounded edges to prevent wear on the rope.

The Sheave has a bearing at hub only, and is so fitted in Shell it is impossible for wire to slip between Shell and Sheave.

Open



Fig. 726A

FOR EXTRA SHEAVES, SEE INDEX

WROUGHT IRON BLOCKS FOR WIRE ROPE

REGULAR PATTERN

Diamond Shell

With Stiff Swivel Hooks

With Shackles

Single

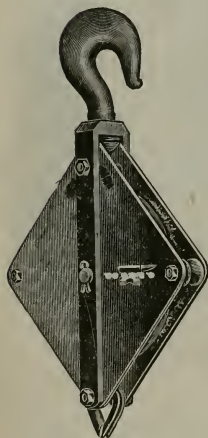


Fig. 678

Double

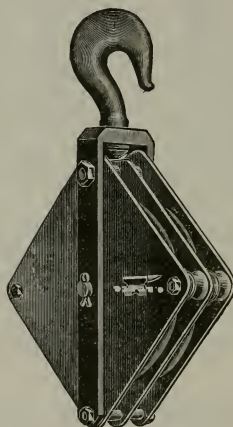


Fig. 679

Triple

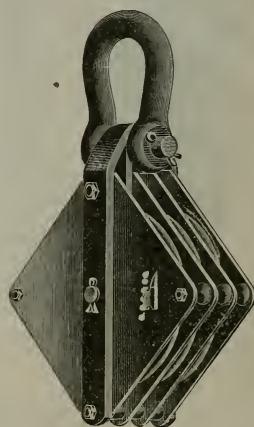


Fig. 686

We can furnish these Blocks with either Hooks or Shackles as desired. Specially recommended for Derrick use.

In Ordering Specify Size of Sheave and State if Becket is Wanted.

Dimensions		Iron Bushed			Phosphor Bronze or Metaline Self-Lubricating Bushed		
Size Sheave inches	For Diam. Rope inches	Single each	Double each	Triple each	Single each	Double each	Triple each
6x1 x $\frac{3}{4}$	$\frac{3}{8}$	\$6.00	\$11.00	\$14.00	\$9.00	\$17.00	\$22.00
8x1 $\frac{1}{4}$ x $\frac{3}{4}$	$\frac{1}{2}$	8.00	13.00	16.00	11.00	19.00	24.00
10x1 $\frac{1}{4}$ x $\frac{7}{8}$	$\frac{5}{8}$	10.00	15.00	20.00	13.00	21.00	28.00
12x1 $\frac{1}{2}$ x 1	$\frac{5}{8}$	12.00	17.00	23.00	15.00	23.00	31.00
14x1 $\frac{1}{2}$ x 1 $\frac{1}{2}$	$\frac{3}{4}$	14.00	19.00	26.00	17.00	25.00	34.00
16x1 $\frac{3}{4}$ x 1 $\frac{1}{4}$	$\frac{7}{8}$	21.50	31.00	39.50	25.00	38.00	50.00

FOR EXTRA SHEAVES, SEE INDEX

WROUGHT IRON BLOCKS FOR WIRE ROPE HEAVY PATTERN

With Stiff Swivel Hooks

Diamond Shell

Fitted with Loose Hooks or Shackles
when preferred

Recommended for Derricks and heavy hoisting of all kinds.

In Ordering Specify Diameter of Sheave,
and State if Becket is Wanted

Single

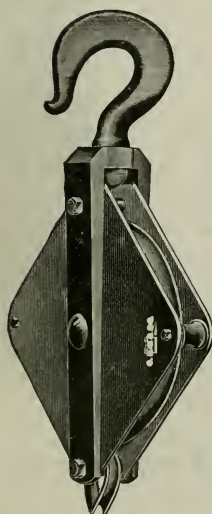


Fig. 687

Double

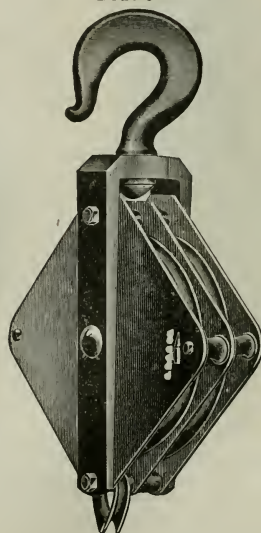


Fig. 688

Dimensions		Iron Bushed			Phosphor Bronze or Metaline Self-Lubricating Bushed		
Size Sheave Inches	For Diam. Rope inches	Single each	Double each	Triple each	Single each	Double each	Triple each
6x1 x $\frac{3}{4}$	$\frac{1}{2}$	\$9.00	\$14.00	\$20.00	\$12.00	\$20.00	\$28.00
8x1 $\frac{1}{4}$ x $\frac{7}{8}$	$\frac{1}{2}$	11.00	16.00	22.50	14.00	22.00	32.00
10x1 $\frac{1}{4}$ x 1	$\frac{5}{8}$	14.00	20.00	28.00	17.00	26.00	37.00
12x1 $\frac{1}{2}$ x 1 $\frac{1}{8}$	$\frac{3}{4}$	16.00	23.00	31.00	19.00	29.00	41.00
14x1 $\frac{1}{2}$ x 1 $\frac{1}{4}$	$\frac{3}{4}$	18.00	25.00	36.00	21.00	31.00	45.00
16x1 $\frac{3}{4}$ x 1 $\frac{1}{2}$	$\frac{7}{8}$	31.00	40.00	46.00	36.00	50.00	65.00
18x1 $\frac{3}{4}$ x 1 $\frac{1}{2}$	1	34.50	45.00	60.00	40.00	56.00	75.00

FOR EXTRA SHEAVES, SEE INDEX

WROUGHT IRON BLOCKS FOR WIRE ROPE

HEAVY PATTERN

With Stiff Swivel Swinging Hooks

Double

Diamond Shell

Single

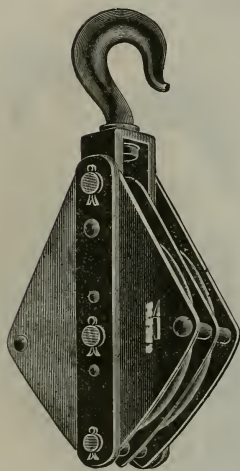


Fig. 715

Furnished with either
Detachable Hooks
or Shackles

The Swinging Hook or
Shackle on these Blocks
makes them the most popu-
lar wherever hoisting is
done.

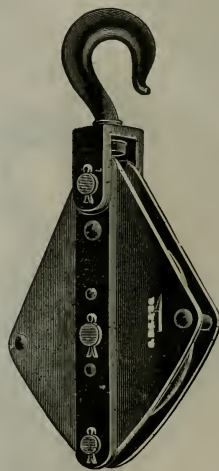


Fig. 714

In Ordering Specify Diameter of Sheave and if Becket is Wanted

Dimensions		Phosphor Bronze or Metaline Self-Lubricating Bushed	
Size Sheave inches	For Diam. Rope inches	Single each	Double each
8x1 ¼ x ⅞	½	\$14.00	\$22.00
10x1 ¼ x 1	⅝	17.00	26.00
12x1 ½ x 1 ⅛	¾	19.00	29.00
14x1 ½ x 1 ¼	¾	21.00	31.00
16x1 ¾ x 1 ½	⅞	36.00	50.00
18x1 ¾ x 1 ½	1	40.00	56.00
20x1 ⅞ x 1 ½	1	49.00	72.00

FOR EXTRA SHEAVES, SEE INDEX

WROUGHT IRON BLOCKS FOR WIRE ROPE EXTRA HEAVY PATTERN

With Shackles. Diamond Shell

Single

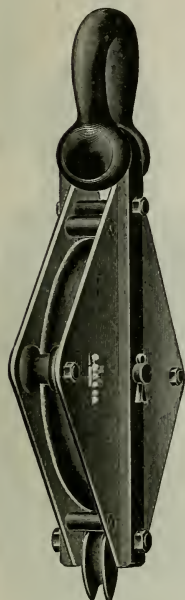


Fig. 691

Double

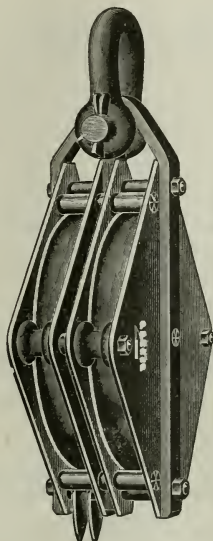


Fig. 692

Triple

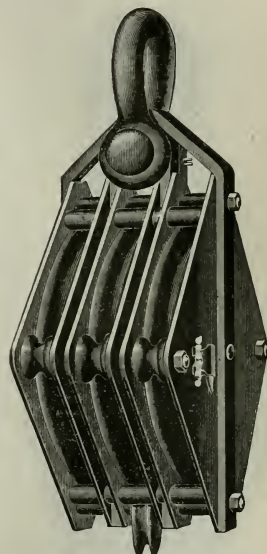


Fig. 693

The center straps in double and triple blocks extend full length of shell, furnishing proper support for center pin in middle of the block.

The strongest wire rope Block manufactured—the Block which eventually is purchased by all contractors because it is reliable and safe, and gives the maximum of service, with a minimum of attention.

In Ordering Specify Size of Sheave and if Becket is Wanted

Dimensions		Iron Bushed			Phosphor Bronze or Metalline Self-Lubricating Bushes		
Size Sheave Inches	For Diam. Rope Inches	Single each	Double each	Triple each	Single each	Double each	Triple each
8x1 ¼ x ⅞	½	\$11.00	\$16.00	\$22.50	\$14.00	\$22.00	\$32.00
10x1 ¼ x 1	⅝	14.00	20.00	28.00	17.00	26.00	37.00
12x1 ½ x 1 ⅛	¾	16.00	23.00	31.00	19.00	29.00	41.00
14x1 ½ x 1 ¼	¾	18.00	25.00	36.00	21.00	31.00	45.00
16x1 ¾ x 1 ½	⅞	31.00	40.00	46.00	36.00	50.00	72.00
18x1 ¾ x 1 ½	1	34.50	45.00	60.00	40.00	56.00	78.00
20x1 ¾ x 1 ½	1	43.00	60.00	72.00	49.00	72.00	90.00

FOR EXTRA SHEAVES, SEE INDEX

WROUGHT IRON BLOCKS FOR WIRE ROPE

SPECIAL EXTRA HEAVY

Triple

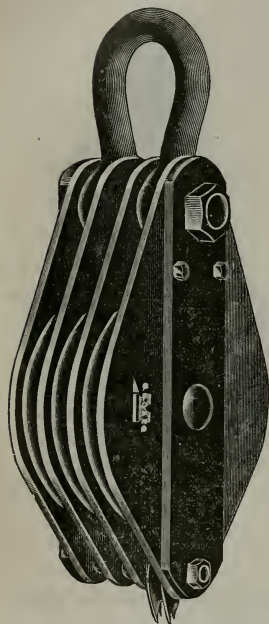


Fig. 702

Quadruple

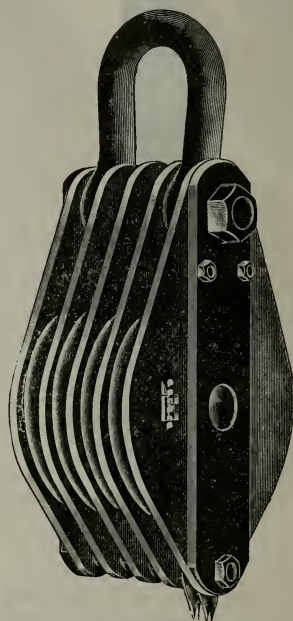


Fig. 703

With Lashing Shackles.

Oval Shell

There is no load too heavy
for these Blocks

We can furnish them in any
capacity

Prices for sizes heavier than
those listed below, upon
application

In Ordering Specify Size of Sheave and State if Becket is Wanted

Dimensions		Phosphor Bronze or Metaline Self-Lubricating Bushed			
Size Sheave inches	For Diam. Rope inches	Single each	Double each	Triple each	Quadruple each
16x1 $\frac{3}{4}$ x1 $\frac{1}{2}$	$\frac{7}{8}$	\$44.00	\$69.00	\$90.00	\$110.00
18x1 $\frac{3}{4}$ x1 $\frac{1}{2}$	1	56.00	85.00	110.00	134.00
20x1 $\frac{7}{8}$ x1 $\frac{1}{2}$	1	76.00	110.00	151.00	187.00
22x1 $\frac{7}{8}$ x1 $\frac{3}{4}$	1	85.00	122.00	165.00	205.00
24x2 $\frac{1}{2}$ x1 $\frac{3}{4}$	1-1 $\frac{1}{8}$	105.00	150.00	200.00	246.00

FOR EXTRA SHEAVES, SEE INDEX

DOUBLE SWIVEL HOOKS—Flattened

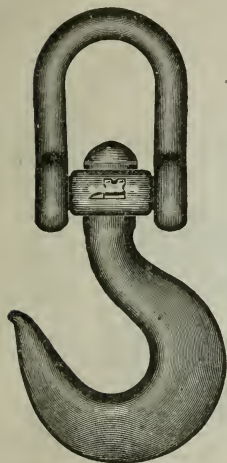


Fig. 625

Size Iron, Round Inches	Weight lbs.	Price, each
1 ½	10	\$2.80
1 ¾	13	3.00
1 ¾	18	3.50
2	25	4.00
2 ¼	35	6.50
2 ½	45	10.00
2 ¾	60	13.20
3	75	14.00
3 ¼	100	21.00
3 ½	120	24.00
4	160	31.00
4 ½	225	43.00
5	275	61.00
5 ½	345	85.00

Sizes 5 and 5 ½ inch fitted with hand clevis.

IMPROVED SKIDDER BLOCK

Three Sizes—11 inch, 14 inch and 18 inch diameter Sheaves

DESCRIPTION

EYE—Best Drop Forged Steel. Eyes are usually made to swivel, but can be made rigid if desired. Note Heavy Shank.

SHELL—Especially designed for strength and lightness to enable the Block to turn easily to follow the lead of the rope. This Prevents the Rope Chafing. The Sides of the Shell are Countersunk to Cover the Edges of Sheaves, thus Preventing Wire from Slipping Between Rim and Shell, and causing it to always maintain its proper position in groove of Sheave.

PIN—Made from Best Cold Drawn Steel with Heavy Nut on each end, Securely Locked.

BUSHING—Phosphor Bronze Bearing Metal. The very best for heavy, rapid work. Perfect lubrication is secured by a large oil chamber in hub of Sheave which is filled with waste and a lubricant which works through openings in Phosphor Bronze Bushing to the Pin. Oil chamber is easily accessible through opening in side of Sheave.

SHEAVES—Are of two kinds. A Special Extra Hard Cast Steel made especially for us for these Blocks. The groove of the Sheave is the most subject to wear of any part of a block and our aim is to give a metal that will outwear any on the market, except the Manganese. Manganese Steel Sheaves are also furnished, if desired, in these Blocks. This steel is so tough it cannot be machined, but must be ground to size. Experience has proven that these Sheaves add from 25% to 50% to the life of the wire. We only ask a reasonable advance for these, and fitted with them, the block is practically indestructible. To distinguish the Manganese, Sheaves are painted red.

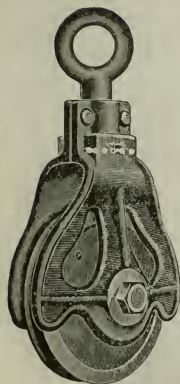


Fig. 636

11 inch Steel Sheave	list each	\$50.00
14 " " "	" "	55.00
18 " " "	" "	75.00

PRICE OF MANGANESE SHEAVES ON APPLICATION

IRON SHEAVES

FOR SNATCH BLOCKS

For Manila Rope

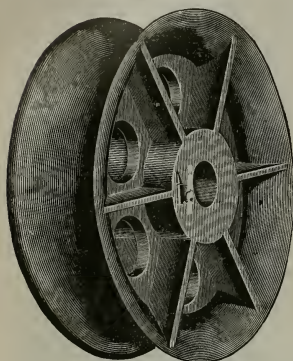
Iron Bushed
For Manila Rope

Fig. 751

Size Sheave inches	For Dia. Rope inches	For Block inches	Iron Bushed each	Improved Roller Bushed each	Phosphor Bronze or Metalline Bushed each
3 x 1½ x ½	¾	6	\$0.30	\$0.75	\$1.40
3½ x 1¼ x ½	¾	7	.40	.85	1.60
4½ x 1¾ x ⅝	1	8	.50	1.20	1.90
5 x 1¾ x ⅝	1¼	9	.60	1.30	2.00
5¾ x 1¾ x ¾	1¼	10	1.20	2.40	3.00
6¾ x 2½ x ¾	1½	12	1.50	2.85	3.75
8 x 2¼ x ¾	1¾	14	1.85	3.45	4.50
9 x 2½ x 1	2	16	2.25	4.50	5.50
10 x 3 x 1½	2¼	18	3.00	6.00	7.00
11 x 3½ x 1½	2½	20	4.00	8.00	9.00
11¾ x 4¼ x 1½	3	22	6.50	11.50	13.00
12½ x 4½ x 1½	3½	24	9.00	15.00	18.00

PHOSPHOR BRONZE BUSHINGS

Self-Lubricating

Inside Diam. in.	Lgth in.	Price each	Inside Diam. in.	Lgth in.	Price each	Inside Diam. in.	Lgth in.	Price each
¾	½	\$0.30	¾	2½	\$1.42	1½	2	\$1.44
¾	⅝	.32	¾	2½	1.48	1½	2½	1.49
¾	¾	.32	¾	1¼	.87	1½	2½	1.55
¾	1	.36	¾	1¼	.92	1½	2½	1.60
¾	1¼	.40	¾	1½	.96	1½	2½	1.65
¾	1¼	.44	¾	1½	1.00	1½	2½	1.72
¾	¾	.36	¾	1¾	1.05	1½	2¾	1.80
¾	¾	.38	¾	1¾	1.14	1½	2¾	1.88
¾	1	.42	¾	2	1.24	1½	3	1.96
¾	1¼	.51	¾	2½	1.29	1½	1½	1.25
¾	1¼	.60	¾	2½	1.34	1½	1½	1.30
¾	1½	.64	¾	2½	1.39	1½	1½	1.36
¾	1½	.69	¾	2½	1.45	1½	1½	1.42
¾	1	.50	1	¾	.80	1½	2	1.44
¾	1¼	.56	1	1¼	.90	1½	2½	1.53
¾	1¼	.64	1	1½	.95	1½	2½	1.62
¾	1¾	.67	1	1½	1.08	1½	2½	1.71
¾	1¾	.72	1	1¾	1.11	1½	2½	1.80
¾	1¾	.76	1	1¾	1.13	1½	2½	1.89
¾	1¾	.79	1	2	1.27	1½	2½	1.98
¾	1¾	.82	1	2	1.41	1½	2½	2.07
¾	2	.84	1	2½	1.45	1½	3	2.15
¾	1	.62	1	2½	1.48	1½	3¼	2.23
¾	1¼	.67	1	2½	1.51	1½	3¼	2.30
¾	1¼	.75	1	2½	1.55	1½	3½	2.37
¾	1½	.77	1	2½	1.58	1½	3½	2.44
¾	1½	.79	1	2½	1.61	1½	3½	2.54
¾	1½	.83	1	2½	1.65	1½	2	1.73
¾	1¾	.90	1	3	1.70	1½	2½	1.84
¾	1¾	1.00	1½	1½	1.27	1½	2½	1.94
¾	2	1.12	1½	1½	1.30	1½	2½	2.03
¾	2¼	1.24	1½	1¾	1.34	1½	2½	2.12
¾	2¼	1.34	1½	1¾	1.39	1½	3	2.48

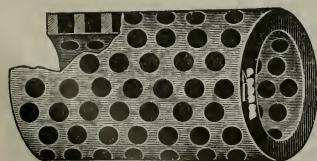


Fig. 761

CAN FURNISH SPECIAL SIZES PROMPTLY

IRON SHEAVES

For Regular and Thick Mortise Blocks

Iron Bushed

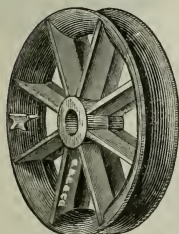


Fig. 743

Improved Roller Bushed

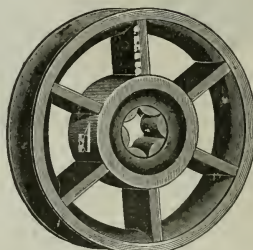


Fig. 744

FOR
MANILA ROPE

Size Sheave inches	For Block, inches	Iron Bushed each	Improved Roller Bushed each	Phosphor Bronze or Metalline Bushes, each
1 $\frac{3}{4}$ x $\frac{1}{2}$ x $\frac{3}{8}$	.....	\$0.09	\$0.40	...
2 x $\frac{1}{2}$ x $\frac{3}{8}$	.....	.10	.42	\$0.60
2 $\frac{1}{4}$ x $\frac{5}{8}$ x $\frac{3}{8}$	.....	.12	.45	.70
2 $\frac{3}{4}$ x $\frac{3}{4}$ x $\frac{3}{8}$	.....	.15	.50	.80
3 x $\frac{3}{4}$ x $\frac{3}{8}$	.....	.20	.55	.90
3 $\frac{1}{2}$ x 1 x $\frac{1}{2}$	.....	.25	.65	1.40
4 $\frac{1}{4}$ x 1 x $\frac{1}{2}$	.....	.30	.75	1.50
4 x 1 $\frac{1}{8}$ x $\frac{1}{2}$	Thick Mortise .....	.35	1.00	1.60
4 $\frac{3}{4}$ x 1 $\frac{1}{8}$ x $\frac{5}{8}$	.....	.35	1.00	1.85
4 $\frac{3}{4}$ x 1 $\frac{3}{8}$ x $\frac{5}{8}$	Thick Mortise .....	.40	1.15	2.00
5 $\frac{1}{2}$ x 1 $\frac{1}{8}$ x $\frac{5}{8}$	.....	.45	1.10	1.95
5 $\frac{1}{2}$ x 1 $\frac{3}{8}$ x $\frac{5}{8}$	Thick Mortise .....	.50	1.25	2.10
6 $\frac{1}{4}$ x 1 $\frac{1}{4}$ x $\frac{5}{8}$	.....	.55	1.35	2.25
6 $\frac{1}{4}$ x 1 $\frac{1}{2}$ x $\frac{3}{4}$	Thick Mortise .....	.65	1.60	2.75
7 $\frac{1}{4}$ x 1 $\frac{1}{4}$ x $\frac{3}{4}$	.....	.70	1.65	2.60
7 x 1 $\frac{1}{2}$ x $\frac{3}{4}$	Thick Mortise .....	.85	1.80	2.95
8 x 1 $\frac{1}{8}$ x $\frac{3}{4}$	.....	.90	1.90	2.95
8 x 1 $\frac{5}{8}$ x $\frac{3}{4}$	Thick Mortise	1.05	2.10	3.25
9 x 1 $\frac{1}{2}$ x $\frac{3}{4}$	.....	1.20	2.40	3.25
9 x 1 $\frac{3}{8}$ x $\frac{3}{4}$	Thick Mortise	1.35	2.55	3.45
9 $\frac{1}{2}$ x 1 $\frac{1}{8}$ x $\frac{7}{8}$	.....	1.40	2.65	3.60
9 $\frac{1}{2}$ x 1 $\frac{3}{8}$ x $\frac{7}{8}$	Thick Mortise	1.50	2.85	4.20
10 x 1 $\frac{1}{8}$ x $\frac{7}{8}$	.....	1.50	2.85	3.90
10 x 1 $\frac{3}{8}$ x $\frac{7}{8}$	Thick Mortise	1.70	3.15	4.85
11 x 1 $\frac{1}{8}$ x $\frac{7}{8}$	.....	1.70	3.20	4.90
11 x 2 $\frac{1}{4}$ x 1	Thick Mortise	2.00	3.50	5.95
12 x 2 $\frac{5}{8}$ x 1 $\frac{1}{4}$	Extra Heavy	6.00	11.00	8.00
13 $\frac{1}{2}$ x 2 $\frac{3}{8}$ x 1 $\frac{1}{4}$	Extra Heavy	7.00	13.00	11.00
14 $\frac{1}{2}$ x 3 $\frac{3}{8}$ x 1 $\frac{1}{2}$	Extra Heavy	9.50	17.00	15.00
15 $\frac{1}{2}$ x 3 $\frac{3}{8}$ x 1 $\frac{1}{2}$	Extra Heavy	14.00	27.00	19.00

WE CAN FURNISH ANY SIZE SHEAVES TO ORDER

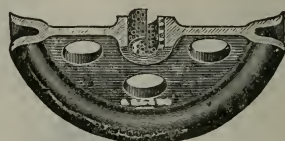
IRON SHEAVES FOR WIRE ROPE

Iron Bushed



Fig. 755

Phosphor Bronze Bushed



No. 756

DEEP GROOVES

Dimensions			Prices		Dimensions			Prices	
Size Sheave Inches	Thickness at Hub Inches	For Diam. Wire, inches	Iron Bushed each	Phosphor Bronze or Metalline Bushed each	Size Sheave Inches	Thickness at Hub Inches	For Diam. Wire, inches	Iron Bushed each	Phosphor Bronze or Metalline Bushed each
3x 1/2 x 3/8	1/2	1/4	\$0.15	\$0.85	11x1 3/4 x 1 1/4	1 7/8	3/4 & 7/8	\$4.10	\$6.35
3x 3/4 x 3/8	3/4	3/8	.23	.90	12x1 x 1	1 1/8	1/2	2.50	4.25
3x1 x 1/2	1 1/8	1/2	.25	1.00	12x1 1/4 x 1	1 3/8	5/8	3.00	5.00
4x 1/2 x 3/8	1/2	1/4	.23	1.00	12x1 1/2 x 1	1 5/8	3/4	3.50	5.50
4x 5/8 x 1/2	1 1/8	5/8	.28	1.10	12x1 1/2 x 1 1/8	1 5/8	3/4	3.50	5.75
4x 3/4 x 1/2	1 1/8	3/8	.30	1.15	12x1 3/4 x 1	1 7/8	3/4	3.75	6.00
4x1 x 1/2	1 1/8	1/2	.40	1.20	12x1 3/4 x 1 1/4	1 7/8	7/8	4.00	6.50
4x1 1/8 x 1/2	1 1/8	1/2	.50	1.35	14x1 1/4 x 1	1 3/8	5/8	4.20	6.20
4x1 1/4 x 1/2	1 1/8	5/8	.60	1.80	14x1 1/2 x 1	1 5/8	3/4	4.40	6.50
5x 5/8 x 1/2	1 1/8	5/8	.35	1.35	14x1 1/2 x 1 1/8	1 5/8	3/4	4.45	6.90
5x 7/8 x 5/8	1 1/8	3/8	.45	1.45	14x1 1/2 x 1 1/4	1 5/8	3/4	4.45	7.00
5x1 x 5/8	1 1/8	1/2	.55	1.65	14x1 3/4 x 1	1 7/8	3/4 & 7/8	5.40	7.60
5x1 1/4 x 5/8	1 3/8	5/8	.80	2.05	14x1 1/2 x 1	2	3/4	5.50	7.75
6x 3/4 x 5/8	1	3/8	.65	1.75	14x1 3/4 x 1 1/4	2	1	6.50	8.75
6x1 x 3/4	1 1/8	3/8	.75	2.00	16x1 1/2 x 1 1/4	1 3/4	7/8	6.00	8.25
6x1 x 3/4	1 1/8	1/2	.75	2.00	16x1 1/2 x 1 1/2	1 3/4	3/4 & 7/8	6.00	8.25
6x1 1/4 x 3/4	1 1/8	5/8	1.00	2.50	16x1 3/4 x 1 1/4	2	7/8 " 1	7.00	8.75
6x1 1/2 x 3/4	1 1/8	3/4	1.00	2.75	16x1 3/4 x 1 1/2	2	7/8	7.00	9.50
6x1 3/4 x 1	1 1/8	7/8	1.75	3.40	16x1 7/8 x 1 1/4	2	7/8	7.10	9.00
7x 3/4 x 5/8	1 1/8	3/8	.75	1.75	16x1 7/8 x 1 1/2	2	7/8	7.10	9.75
7x1 x 3/4	1 1/8	1/2	1.10	2.30	16x2 x 1 1/2	2 1/8	1	7.50	10.50
7x1 1/4 x 3/4	1 1/8	5/8	1.35	2.75	18x1 3/8 x 1 1/4	1 5/8	5/8 & 3/4	7.40	9.00
7x1 1/2 x 3/4	1 1/8	3/4	1.50	3.00	18x1 1/2 x 1 1/4	1 3/4	3/4	7.50	9.50
8x1 x 3/4	1 1/8	1/2	1.20	2.65	18x1 1/2 x 1 1/2	1 3/4	3/4	7.50	10.00
8x1 1/4 x 3/4	1 3/8	1/2 & 5/8	1.40	2.90	18x1 3/4 x 1 1/4	2	7/8 & 1	9.50	11.50
8x1 1/4 x 3/4	1 3/8	1/2	1.40	3.00	18x1 3/4 x 1 1/2	2	7/8 " 1	9.50	12.50
8x1 1/2 x 3/4	1 5/8	3/4	1.80	3.70	18x2 1/8 x 1 1/4	2 1/4	1	10.25	12.75
8x1 3/4 x 1	1 7/8	7/8	2.75	4.75	18x2 1/8 x 1 1/2	2 1/4	1	10.50	13.50
9x1 1/8 x 3/4	1 1/4	1/2	1.75	3.25	20x1 3/8 x 1 1/4	1 1/2	5/8	8.75	10.50
9x1 1/4 x 3/4	1 3/8	3/4	1.75	3.50	20x1 3/8 x 1 1/2	2	3/4	12.00	15.00
9x1 1/2 x 3/4	1 5/8	3/4	2.40	4.10	20x1 7/8 x 1 1/2	2	7/8 & 1	12.00	15.00
9x1 3/4 x 1	1 7/8	7/8	2.80	4.80	20x2 1/8 x 1 1/2	2 3/8	1 1/8 " 1 1/4	12.50	15.50
10x1 x 7/8	1 3/8	1/2	1.80	3.50	20x2 1/8 x 1 1/2	2 3/8	1 1/2	14.00	17.00
10x1 1/8 x 7/8	1 1/4	1/2	2.10	3.85	22x1 3/4 x 1 1/2	2	7/8	13.00	16.00
10x1 1/4 x 7/8	1 3/8	5/8	2.50	3.75	22x1 7/8 x 1 1/2	2 1/8	1	15.00	18.00
10x1 1/2 x 1	1 3/8	5/8	2.50	4.00	24x1 7/8 x 1 1/2	2 1/8	7/8	17.25	20.50
10x1 1/2 x 1	1 5/8	5/8	2.70	4.50	24x2 x 1 1/2	2 1/4	1	19.00	22.00
10x1 1/2 x 1	1 5/8	3/4	2.70	4.50	28x1 7/8 x 1 1/2	2	1	20.00	25.00
10x1 7/8 x 1 1/4	2	7/8	4.00	6.25	28x1 7/8 x 2	2	1	21.00	27.00
10x1 3/4 x 1 1/4	1 7/8	1	4.00	6.25	30x2 1/8 x 1 3/4	2 3/4	1	26.00	33.00
11x1 3/4 x 1	1 7/8	5/8	4.00	5.75	30x2 1/8 x 2	2 3/4	1	27.00	34.00

CAN FURNISH SPECIAL SIZE SHEAVES PROMPTLY

IRON SHEAVES FOR WIRE ROPE

EXTRA HEAVY PATTERN

With Deep Rim

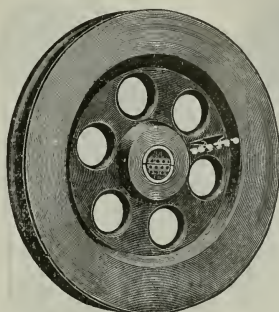


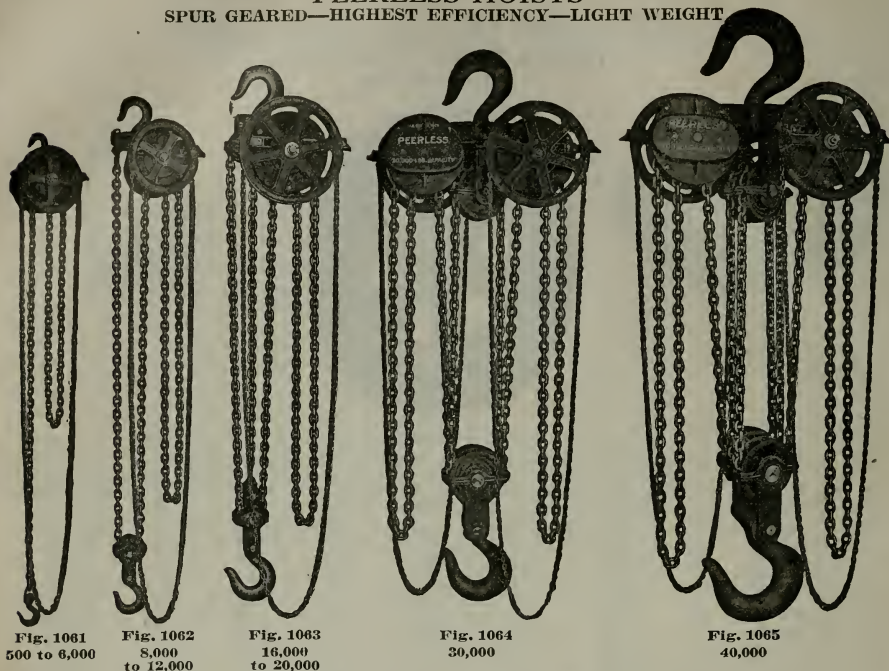
Fig. 757

Size Sheave inches	Thickness at Hub inches	For Diameter Wire inches	Iron Bushed each	Phosphor Bronze or Metalline Bushed each
6x1 x 3/4	1 1/16	1/2	\$0.75	\$2.10
6x1 1/4 x 3/4	1 1/8	5/8	.85	2.30
6x1 1/2 x 3/4	1 5/16	3/4	.90	2.50
7x1 x 3/4	1 1/8	1/2	1.00	2.30
7x1 1/4 x 3/4	1 1/8	5/8	1.10	2.65
7x1 3/8 x 3/4	1 1/2	5/8	1.10	2.65
7x1 1/2 x 7/8	1 5/8	3/4	1.50	3.70
8x1 x 3/4	1 1/8	1/2	1.15	2.85
8x1 1/4 x 7/8	1 3/8	5/8	1.25	3.25
8x1 1/2 x 7/8	1 5/8	3/4	1.55	3.75
9x1 1/4 x 7/8	1 3/8	5/8	1.75	4.00
9x1 1/2 x 7/8	1 5/8	3/4	1.85	4.30
10x1 1/4 x 1	1 3/8	5/8	2.65	4.00
10x1 1/2 x 1	1 5/8	3/4	2.75	4.50
10x1 3/4 x 1	1 7/8	7/8	3.75	5.65
11x1 1/2 x 1	1 5/8	3/4	3.00	4.75
12x1 1/4 x 1	1 3/8	1/2 and 5/8	3.00	5.00
12x1 1/2 x 1 1/8	1 5/8	3/4	3.25	6.00
12x1 3/4 x 1 1/4	1 7/8	7/8 and 1	4.50	7.00
14x1 1/4 x 1	1 3/8	5/8	3.50	6.00
14x1 1/2 x 1 1/8	1 5/8	3/4 and 7/8	4.20	7.25
14x1 1/2 x 1 1/4	1 5/8	3/4 and 7/8	4.20	7.75
14x1 3/4 x 1 1/4	2	1	4.75	8.25
16x1 1/2 x 1 1/4	1 5/8	3/4	5.75	8.75
16x1 3/4 x 1 1/2	2	7/8	6.50	9.00
16x1 3/4 x 1 1/2	2	1	6.50	9.00
16x2 1/8 x 1 1/2	2 3/8	1 1/4	7.50	11.50
18x1 1/2 x 1 1/2	1 3/4	3/4	6.75	10.00
18x1 3/4 x 1 1/2	2	3/4	7.50	10.50
18x1 3/4 x 1 1/2	2	7/8	7.75	10.75
18x1 3/4 x 1 1/2	2	1	7.85	10.90
20x1 3/8 x 1 1/2	2	7/8 and 1	8.10	12.25
20x2 1/8 x 1 1/2	2 3/8	1 1/8 and 1 1/4	9.25	13.50
20x2 1/4 x 1 1/2	2 3/8	1 1/2	10.00	14.50
22x1 3/8 x 1 1/2	2 1/8	7/8 and 1	13.00	17.00
22x2 1/4 x 1 3/4	2 1/2	1 1/2	15.00	21.00
24x2 1/8 x 1 3/4	2 3/8	1 1/8	18.00	23.00
26x2 1/2 x 1 3/4	2 3/4	1 1/2	27.00	34.00

SPECIAL SIZES FURNISHED PROMPTLY

PEERLESS HOISTS

SPUR GEARED—HIGHEST EFFICIENCY—LIGHT WEIGHT



Showing Different Arrangements of Chains on Various Sizes of Peerless Hoists

THE PEERLESS HOIST

IMPROVED 1913

Although the Peerless Hoist has given unequaled satisfaction in the past, several improvements have recently been added to further increase the strength and durability. The scientific design and high quality of manufacture give this hoist an efficiency of eighty per cent. All hoists undergo a proof test fifty per cent beyond the rated load.

The trunnions on the top hook now engage in two drop forged hangers, held in recesses in the side frames and the load sheave is cast steel and runs in removable bushings pressed in the lower ends of the steel hangers. The load chain is made of the best material obtainable and is heat treated to increase the ductility.

The cast iron cover over the gears is now replaced by a pressed steel dust cover, the outer end of the intermediate gear studs and pinion shaft being held by a supporting yoke.

The hand wheel is made with a pressed steel center for greater protection against accidental breakage and the hand chain guards have a steel flange to guide the chain smoothly at all times.

These improved parts can all be applied to the previous model but a new style frame and steel hanger must replace the old frame. Also a steel cover and supporting yoke replace the old cast iron cover.

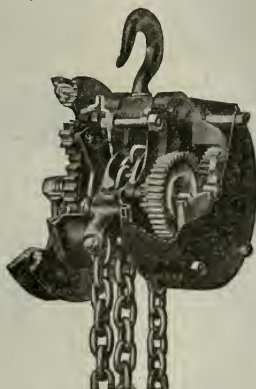
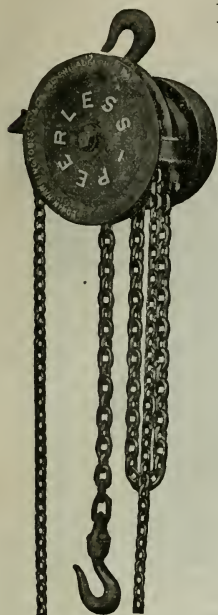
In operating the Peerless Hoist a pull exerted on the hand chain to raise the load is transmitted, with almost no loss by friction, through a simple balanced train of spur gears to the load wheel. The sustaining mechanism is a special patented friction brake which revolves as one piece with the pinion shaft when lifting, without waste of energy and without noise; but when hoisting ceases, it is automatically and positively locked to hold the load until again moved by the operator. The parts of this friction brake require no adjustment and only the slightest pull is required to lower the load.

All gears are accurately cut from solid steel blanks and are bushed with bronze. The teeth on the central pinion are unusually strong, and are heat treated to prevent wear. A single strand of load chain on the six thousand pound block and the compact arrangement and close head room of larger sizes are appreciated by all users.

See following pages for sizes and prices

PEERLESS CHAIN HOISTS

SPUR GEARED



PRICES AND DATA ON PEERLESS HOISTS

	Capacity in pounds	Regu- lar Lift, in feet	Price of Hoist, Regular Lift	Price of Extra Lift, per foot	Distance between Hooks		Weight of Hoist in lbs.	Pull on hand chain to lift full load, in lbs.	Feet of chain handed to lift load one foot	Number of Strands of load chain
					Short- est inches	Reach (Reg. Lift) ft. in.				
REGULAR STYLE	500	8	\$ 30.00	\$0.85	13	9 1	48	50	14.0	1
	1,000	8	35.00	.90	14	9 2	62	64	20.3	1
	2,000	8	45.00	.95	16	9 4	84	81	31.5	1
	3,000	8	60.00	1.00	19	9 7	115	114	34.5	1
	4,000	9	70.00	1.05	22 ¼	10 10 ¼	157	124	40.5	1
	6,000	10	90.00	1.25	24	12 0	236	130	59.0	1
	8,000	10	110.00	1.60	29	12 5	230	128	81.0	2
	10,000	12	140.00	2.00	32	14 8	352	112	118.0	2
	12,000	12	165.00	2.00	34 ½	14 10 ½	359	134	118.0	2
	16,000	12	200.00	2.75	39 ¾	15 3 ¾	460	125	177.0	3
	20,000	12	240.00	3.20	42	15 6	533	181	154.5	3
	30,000	12	340.00	4.60	55 ¼	16 7 ¼	995	208†	103.0†	4
QUICK SPEED	40,000	12	425.00	6.40	62 ¼	17 2 ¼	1,260	186†	154.5†	6
	500	8	30.00	.85	13	9 1	48	47.6*	7.5	1
	1,000	8	35.00	.90	14	9 2	62	65.9*	10.0	1
	2,000	8	45.00	.95	16	9 4	48	85.9*	16.8	1

*Pull is given to raise only one-half the rated load on Quick Speed Hoists.

†On each of two hand chains.

For parts, see index

COMBINED TRAVELERS

WITH PEERLESS HOISTS

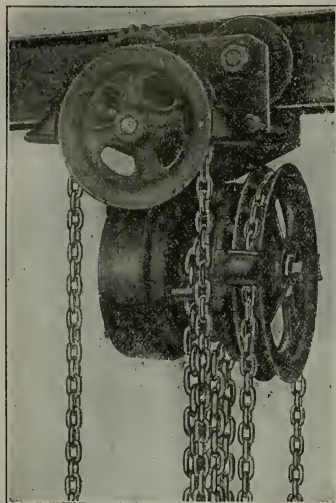


Fig. 1101. I-Beam

COMBINED I-BEAM TRAVELERS

With either Plain or Geared Travelers the Hoists in combination save head room and hold the hoist in the same relative position to the traveler so that the operator does not get his chains confused. This arrangement is most desirable on the beams of traveling and jib cranes and on overhead tracks where it is not necessary to detach the hoist for use in other places.

COMBINED I-BEAM TRAVELERS

Capacity in lbs.	Standard Size of I-Beam in inches	Regular Lift in feet	Shortest Distance Beam to Hook in inches*	Price, Plain	Price, Geared	Price Extra Lift per foot, Plain	Price Extra Lift per foot, Geared
1,000	5	8	15 3/4	\$49.00	\$61.00	\$0.90	\$1.40
2,000	6	8	17 1/4	61.00	73.00	.95	1.45
3,000	7	8	20	79.00	91.00	1.00	1.50
4,000	8	9	23	92.00	105.00	1.05	1.55
6,000	10	10	25 1/4	117.00	132.00	1.25	1.75
8,000	12	12	28 3/4	143.00	162.00	1.40	2.00
10,000	13	12	34 1/4	183.00	205.00	2.00	2.50
12,000	15	12	36 1/4	220.00	245.00	2.20	2.70
16,000	20	12	41 1/2	270.00	295.00	2.75	3.25
20,000	24	12	43	325.00	355.00	3.20	3.70
30,000	24	12	58	440.00	490.00	4.60	5.10
40,000	24	12	59 3/4	540.00	615.00	6.40	6.90

*From under side of I-Beam to inside of hook.

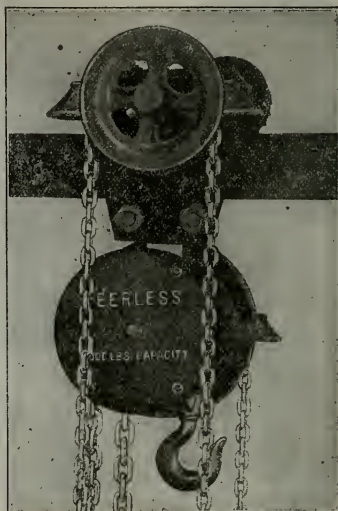


Fig. 1102. Flat Rail

COMBINED FLAT RAIL TRAVELERS

With travelers on flat bar overhead track, where belts and pipe lines do not permit the use of short hangers it is very desirable to have a hoist with short head room. The permanent combination of hoists and flat rail travelers brings the hoist as near as possible to the rail.

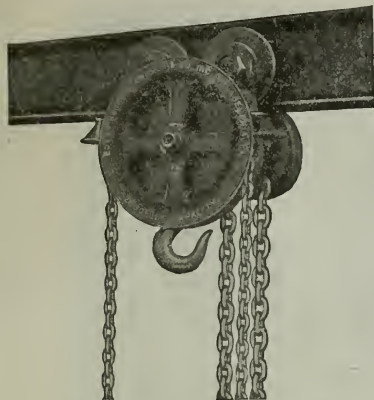
Because of the ease of erecting and bending for curves, the flat bar track, with combined hoists and travelers, is the most satisfactory system for shops and warehouses.

COMBINED FLAT RAIL TRAVELERS

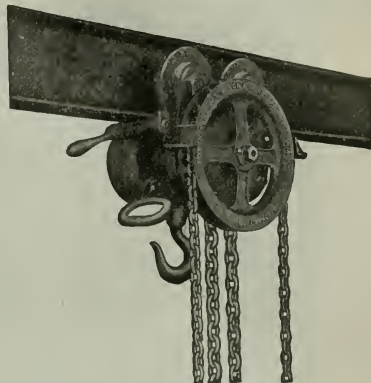
Capacity in lbs.	Standard Size of Rail in inches	Regular Lift in feet	Shortest Distance Beam to Hook in inches*	Price, Plain	Price, Geared	Price Extra Lift per foot, Plain	Price Extra Lift per foot, Geared
500	3x1/2	8	17	\$41.00	\$52.00	\$0.85	\$1.35
1,000	3x1/2	8	17 1/4	46.00	57.00	.90	1.40
2,000	4x3/4	8	20 1/4	59.00	71.00	.95	1.45
3,000	4x3/4	8	23	74.00	86.00	1.00	1.50
4,000	4x3/4	9	26 1/4	87.00	100.00	1.05	1.55
6,000	6x1	12	29 1/2	111.00	125.00	1.25	1.75
8,000	6x1	10	34	131.00	145.00	1.60	2.10

*From top of rail to inside of hook.

PEERLESS TROLLEY HOISTS



Army Type



Navy Type

For use in cramped locations, to overcome the comparatively greater head room of regular hoists and travelers, the Peerless Trolley Hoist was built, in which the regular internal mechanism of the hoist and the trolley wheels are carried by the same side frames. This construction is so compact that the distance between the hook and beam is even less than between the hooks on the regular hoist. The gears are protected from dirt by a tight cover, but its removal does not interfere with the operation of the hoist. Trolley wheels are fitted with roller bearings and are made regularly of a large diameter requiring that the I-beam be supported by countersunk bolts. Small wheels can be furnished to pass regular bolt heads but at a small sacrifice of head room.

These trolley hoists are built in two styles, the Army and Navy types, the latter having a drag handle and clamp for binding it to the beam. They are used largely by the War Department for handling ammunition, both on shore and shipboard, and also by others where close head room is important.

ARMY TYPE

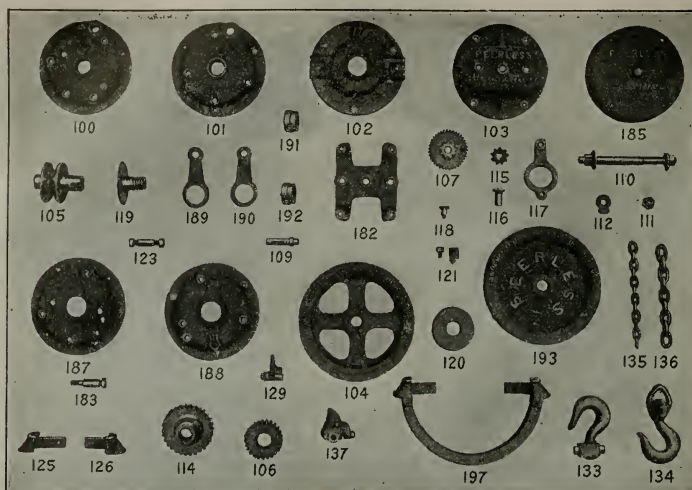
Capacity in lbs.	Regular Lift in feet	Price of Hoist Reg. Lift	Price of Extra Lift per foot	Size of I-Beam in inches	I-Beam Wt. per foot in lbs.	Min. Dist. bet. Hook and I-Beam	Extreme Width of Hoist in in.	Weight of Hoist in lbs.
500	8	\$ 45.00	\$0.85	5	9 3/4	7 1/4	8 3/4	75
1,000	8	50.00	.90	5	9 3/4	7 1/2	8 3/4	78
2,000	8	65.00	.95	6	12 1/4	9 1/2	9 3/4	123
3,000	8	85.00	1.00	7	15	12	11 1/2	163
4,000	9	100.00	1.05	8	18	14	12 3/4	220

NAVY TYPE

Capacity in lbs.	Regular Lift in feet	Price of Hoist Reg. Lift	Price of Extra Lift per foot	Size of I-Beam in inches	I-Beam Wt. per foot in lbs.	Min. Dist. bet. Hook and I-Beam	Extreme Width of Hoist in in.	Weight of Hoist in lbs.
500	8	\$ 55.00	\$0.85	5	9 3/4	7 1/4	8 3/4	80
1,000	8	60.00	.90	5	9 3/4	7 1/2	8 3/4	81
2,000	8	75.00	.95	6	12 1/4	9 1/2	9 3/4	125
3,000	8	95.00	1.00	7	15	12	11 1/2	166
4,000	9	110.00	1.05	8	18	14	12 3/4	227

PARTS OF PEERLESS HOISTS

500 TO 6,000 POUNDS



List No.	Name	500	1,000	2,000	3,000	4,000	6,000	8,000	10,000 to 40,000
100	Back Frame	\$1.50	\$1.50	\$2.00	\$3.00	\$4.00	\$5.60	\$4.00	\$5.60
101	Front Frame	1.50	1.50	2.00	3.00	4.00	5.60	4.00	5.60
102	Front Cover	1.20	1.20	1.70	2.40	3.20	4.40	3.20	4.40
103	Back Cover	1.00	1.20	1.70	2.40	3.20	4.40	3.20	4.40
104	Hand Wheel*	1.60	1.60	2.30	3.00	3.60	5.30	3.60	5.30
105	Load Wheel* .....	.90	1.20	1.90	2.40	2.80	3.80	2.80	3.80
106	Main Gear*	1.60	1.60	2.10	3.60	4.10	5.00	4.10	5.00
107	Intermediate Gear, each† .....	.60	.80	1.00	1.40	1.60	1.80	1.60	1.80
108	Intermediate Pinion, each* .....	.40	.40	.50	.70	.80	.90	.80	.90
109	Intermediate Pinion Stud, each* .....	.40	.40	.50	.70	.80	1.00	.80	1.00
110	Driving Pinion and Shaft, complete*†	2.00	2.70	3.40	4.30	5.10	6.00	5.10	6.00
112	Check Washer* .....	.30	.30	.40	.50	.60	.70	.60	.70
114	Ratchet Disc*	1.00	1.00	1.40	1.50	1.70	2.00	1.70	2.00
115	Ratchet Pinion* .....	.40	.40	.40	.40	.40	.40	.40	.40
116	Ratchet Pinion Stud* .....	.30	.30	.30	.30	.30	.30	.30	.30
117	Ratchet Pinion Carrier Arm* .....	.50	.50	.50	.50	.60	.70	.60	.70
118	Ratchet Pinion Carrier Stud* .....	.30	.30	.30	.30	.30	.30	.30	.30
119	Friction Disc*	1.20	1.20	2.00	2.80	3.80	4.50	3.80	4.50
120	Leather Washer .....	.40	.40	.60	.70	.80	.90	.80	.90
121	Friction Lock and Bolt* .....	.50	.50	.50	.50	.50	.50	.50	.50
122	Connecting Stud and Nuts* .....	.40	.40	.50	.70	.80	.90	1.80	.90
125-6	Hand Chain Guides, pair .....	.80	.80	.90	1.30	1.50	1.70	1.50	1.70
127	Load Chain Guide .....	.50	.50	.60	.80	.90	1.00	.90	1.00
129	Stripper* .....	.30	.30	.40	.60	.80	.90	.80	.90
131	Hook only* .....	.80	1.00	1.30	1.70	2.00	2.60	.....	.....
133	Top Hook and Swivel	1.70	2.00	2.60	3.50	4.10	5.20	.....	.....
134	Bottom Hook and Swivel*	1.70	2.00	2.60	3.50	4.10	5.20	.....	.....
135	Hand Chain, per ft.* .....	.25	.25	.25	.25	.25	.25	.....	.....
136	Hand Chain, complete*	4.25	4.25	4.25	4.50	5.00	5.50	.....	.....
137	Load Chain, per ft.* .....	.35	.40	.45	.50	.55	.75	.....	.....
138	Load Chain, com. with Hook, reg. lift*	4.35	5.60	6.65	8.17	9.88	13.83	.....	.....
187	Back Frame	1.30	1.30	1.70	2.60	3.50	4.80	.....	.....
188	Front Frame	1.30	1.30	1.70	2.60	3.50	4.80	.....	.....
189	Back Hanger .....	.50	.50	.70	.90	1.10	1.50	.....	.....
190	Front Hanger .....	.50	.50	.70	.90	1.10	1.50	.....	.....
191	Back Hanger Bushing .....	.30	.30	.40	.50	.60	.80	.....	.....
192	Front Hanger Bushing .....	.30	.40	.50	.60	.80	.90	.....	.....
193	Hand Wheel Steel Plate	1.60	1.60	2.30	3.00	3.60	5.30	.....	.....
197	Loop Chain Guard	1.60	1.60	1.80	2.60	3.00	3.40	.....	.....

†Parts 107 and 110 must be so specified when wanted for "quick speed" hoists.

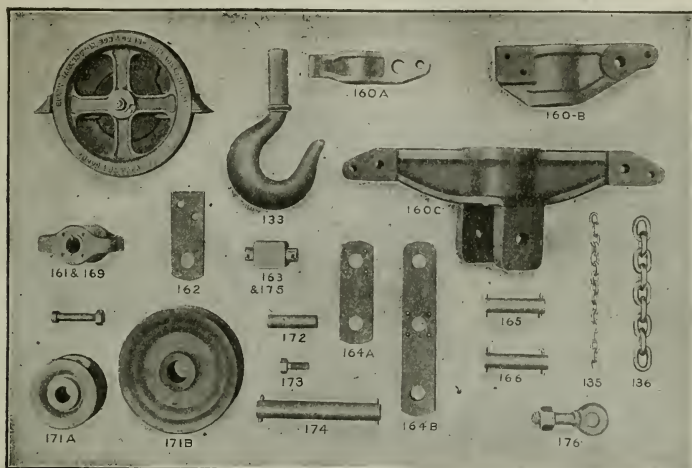
*Also used in Army and Navy Type.

NOTE.—In Ordering Parts Always Give Number and Capacity of Hoist.

For Parts 4 to 40 Tons, See Next Page.

PARTS OF PEERLESS HOISTS

8,000 to 40,000 POUNDS



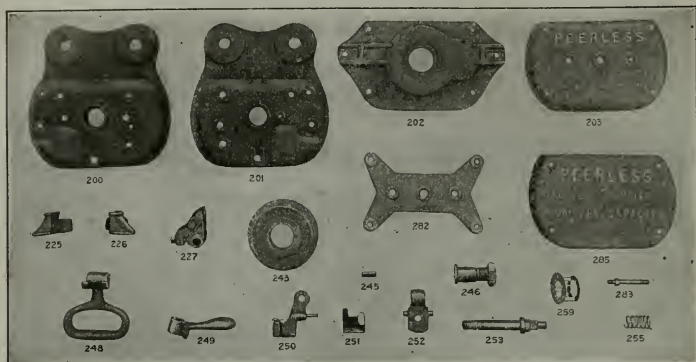
PRICES OF 8,000 TO 40,000 PEERLESS PARTS

List No.	Name	8,000	10,000	12,000	16,000	20,000	30,000	40,000
	Main Block	\$51.00	\$65.00	\$65.00	\$65.00	\$65.00	\$65.00	\$65.00
	Top Yoke, complete	19.50	29.50	35.50	62.50	73.50	92.20	126.20
133	Top Hook	8.50	10.50	16.50	19.00	27.00	32.00	50.00
160-A	Top Yoke	9.00	17.00	17.00	.....	.....	.....	.....
160-B	Top Yoke .....	.....	.....	.....	26.00	26.00	.....	.....
160-C	Top Yoke .....	.....	.....	.....	.....	.....	35.00	42.00
162	Side Plates, each .....	.....	.....	.....	2.50	3.00	4.00	5.00
166	Top Pin and Cotter .....	.....	.....	.....	2.50	3.00	3.50	4.00
169	Guard Yoke .....	.....	.....	.....	3.50	4.00	4.50	5.00
170	Side Plate Bolt .....	.....	.....	.....	.50	.50	.....	.....
171-A	Top Sheave .....	.....	.....	.....	4.50	5.50	.....	.....
171-B	Top Sheave .....	.....	.....	.....	.....	.....	6.00	6.00
172	Top Yoke Pin	1.00	1.00	1.00	1.00	1.00	1.00	1.00
173	Side Plate Cap Screws .....	.....	.....	.....	.....	.....	.10	.10
174	Side Plate Pin .....	.....	.....	.....	.....	.....	1.00	1.00
176	Eye Bolt and Nut	1.00	1.00	1.00	.....	.....	.....	.....
	Bottom Block, complete	23.00	29.00	35.00	45.50	62.00	73.50	109.50
133	Bottom Hook	8.50	10.50	16.50	19.00	27.00	32.00	50.00
135	Hand Chain, per ft. ....	.25	.25	.25	.25	.25	.25	.25
136	Load Chain, per ft. ....	.55	.75	.75	.75	.90	.90	.90
161	Bottom Guard Yoke	2.50	3.50	3.50	3.50	4.00	5.00	5.50
163	Bottom Swivel	2.50	3.00	3.00	4.00	8.00	12.00	20.00
133 }	Bottom Hook and Swivel ..	11.00	13.50	19.50	23.50	35.00	44.00	70.00
163 }	Bottom Hook and Swivel ..	11.00	13.50	19.50	23.50	35.00	44.00	70.00
164-A	Side Plates, each	2.00	2.50	2.50	.....	.....	5.00	6.00
164-B	Side Plates, each .....	.....	.....	.....	4.00	4.50	.....	.....
165	Bottom Sheave Pin	2.00	2.50	2.50	2.50	3.00	3.50	4.00
171-A	Bottom Sheave	3.50	4.50	4.50	4.50	5.50	.....	.....
171-B	Bottom Sheave .....	.....	.....	.....	.....	.....	6.00	6.00
175	Cross Bar .....	.....	.....	.....	3.00	4.50	.....	.....
176	Eye Bolt and Nut .....	.....	.....	.....	1.00	1.00	.....	.....
	Hand Chain, each, complete	.....	.....	.....	.....	.....	.....	.....
	Regular Lift	5.50	6.50	6.50	6.75	6.75	8.25	8.25
	Load Chain, complete, Regular Lift	12.65	20.25	20.25	30.38	36.45	54.00	82.80

NOTE:—In ordering Parts always give Number and capacity of Hoist.

PARTS OF PEERLESS TROLLEY HOISTS

ARMY AND NAVY



List No.	Name	500	1,000	2,000	3,000	4,000
200	Back Frame	\$3.00	\$3.00	\$5.70	\$7.50	\$9.00
201	Front Frame	3.00	3.00	5.70	7.50	9.00
202	Front Cover	1.20	1.20	1.70	2.40	3.20
203	Back Cover	* 1.00	1.20	1.70	2.40	3.20
225 }	Hand Chain Guide, pair.....	.80	.80	.90	1.30	1.50
226 }						
227	Load Chain Guide.....	.50	.50	.60	.80	.90
243	Trolley Wheel, large Diameter, each...†	2.00	2.00	2.50	3.50	4.50
245	Anti-Friction Rollers, each set.....	.30	.30	.30	.40	.40
246	Trolley Wheel Stud and Nut, each....	1.20	1.20	1.20	1.50	1.50
259	Roller Cages, each.....	.50	.50	.50	.70	.70
248	Grip Handle	1.10	1.10	1.20	1.30	1.40
249	Lock Handle	1.00	1.00	1.00	1.00	1.00
250 }	Right and Left Hand Lock, pair.....	3.50	3.50	3.60	3.80	4.00
251 }						
252	Lock Support	2.00	2.00	2.10	2.20	2.30
253	Lock Stud and Nut.....	2.00	2.00	2.10	2.20	2.30
255	Lock Spring .....	.30	.30	.30	.30	.30
260	Trolley Wheel, small Diameter, each...†	2.00	2.00	2.50	3.50	4.50
282	Gear Spider	* .50	.50	.60	.80	1.50
283	Gear Spider Stud, each.....	* .10	.10	.10	.10	.15
285	Gear Cover	* .70	.80	.90	1.30	2.40

*New style cover and spider interchange with old style back cover.

†Large diameter wheels (piece 243) are used where track is riveted to support; small diameter (piece 260) when clearance for bolt heads is required.

HARRINGTON SCREW CHAIN HOISTS

Hand operated Chain Hoists, because of the ease of operation and general utility, are extensively used in all the large industrial plants throughout the country. Even in places where power is easily available, they are preferred to power hoists.

No matter what the class of hoisting may be, the most reliable and cheapest method is to use Chain Hoists. Harrington Hoists are made by skilled workmen from the highest grade material and are designed for long life and to give the best service to all users.

As all parts are made complete by jigs and gauges and inspected before going to the assembling room, repairs are sure to interchange with old parts. The load chains are all made by hand labor from specially selected iron, undergo several rigid inspections, and each link is carefully tested.

The hoists are made in three styles:

The Peerless—For fast speed and high efficiency. Shown on preceding pages.

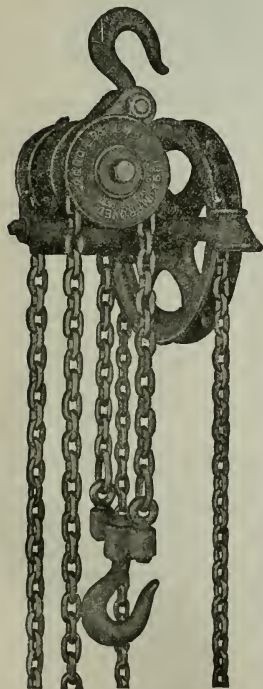
The Screw—For simplicity and rough usage.

The Differential—For occasional use not demanding high efficiency.

HARRINGTON IMPROVED SCREW HOISTS

1894 Patent

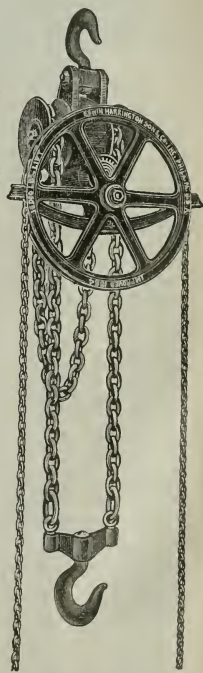
While not so fast as the Peerless, it is a powerful and compact block. It is built to withstand the wear and tear of hard usage. The worm gear is made of bronze with square hubs; it is driven by a steel worm. The load wheels have square holes fitted to a square hub on the worm gear, and are reversible so that when one side is worn the wheels can be taken off and reversed. Load is carried on two distinct chains. A thrust screw and bronze washer are placed at the end of the worm, to obtain fast or slow speed in lowering.



500 to 12,000

Capacity in lbs.	Regular Lift in feet.	Price of Hoist, Regular Lift	Price of Extra Lift, per foot	Minimum Distance between Hooks in in.	Weight of Hoist, in lbs.	Full on Hand Chain to Lift Full Load	Feet of Chain Handled to Lift Load 1 ft.	Number of Strands of Load Chain
500	8	\$22.50	\$1.10	14½	41	20	64.0	2
1,000	8	25.00	1.20	17	68	49	60.5	2
2,000	8	30.00	1.30	18	75	71	76.0	2
3,000	8	40.00	1.40	19	106	99	88.5	2
4,000	9	50.00	1.44	22	160	129	93.5	2
6,000	10	75.00	1.50	30	247	163	96.0	2
8,000	10	95.00	1.70	32	325	190	128.0	2
10,000	12	140.00	2.20	39	483	293	103.0	2
12,000	12	180.00	2.50	39½	555	293	110.0	2
16,000	12	210.00	2.90	41	735	403	148.0	2
20,000	12	275.00	2.90	47	785	358	198.0	2
30,000	12	340.00	5.10	51¾	1,179	424	296.0	4

We can furnish to hoist any desired length.
For prices of parts, see following pages.



16,000 and 30,000

COMBINED TRAVELERS WITH HARRINGTON SCREW HOISTS

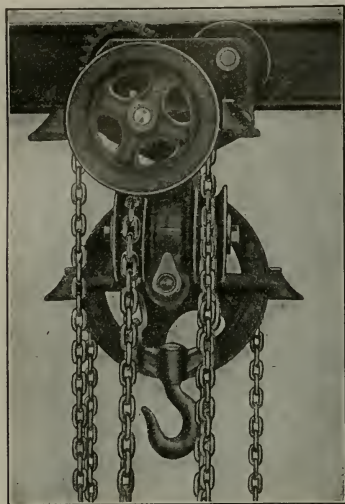


Fig. 1051. I-Beam Traveler

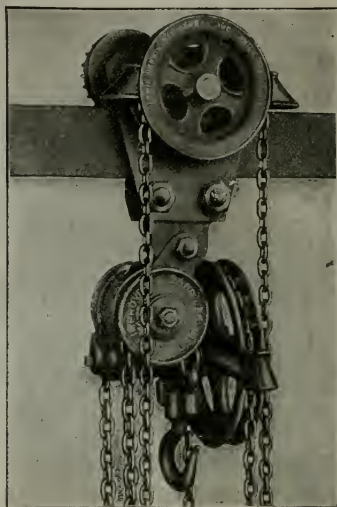


Fig. 1052. Flat Rail Traveler

Where head room is limited, also where hoists are not taken down, this type is desirable.

I-BEAM TRAVELERS

Capacity in lbs.	Standard Size of I-Beam in inches	Regular Lift in feet	Shortest Distance Beam to Hook* in inches	Price Plain	Price Geared	Price Extra Lift per foot Plain	Price Extra Lift per foot Geared
1,000	5	8	15 1/2	\$39.00	\$51.00	\$1.20	\$1.70
2,000	6	8	16	46.00	58.00	1.30	1.80
3,000	7	8	18 3/4	59.00	71.00	1.40	1.90
4,000	8	9	20	72.00	85.00	1.44	1.94
6,000	9	10	29 3/8	102.00	117.00	1.50	2.00
8,000	10	10	29 5/8	128.00	147.00	1.70	2.20
10,000	12	12	34 1/2	183.00	205.00	2.00	2.50
12,000	15	12	32 3/8	235.00	260.00	2.50	3.00
16,000	20	12	38	280.00	305.00	2.90	3.40
20,000	24	12	41 3/4	360.00	390.00	2.90	3.40

*From under side of I-Beam to inside of hook.

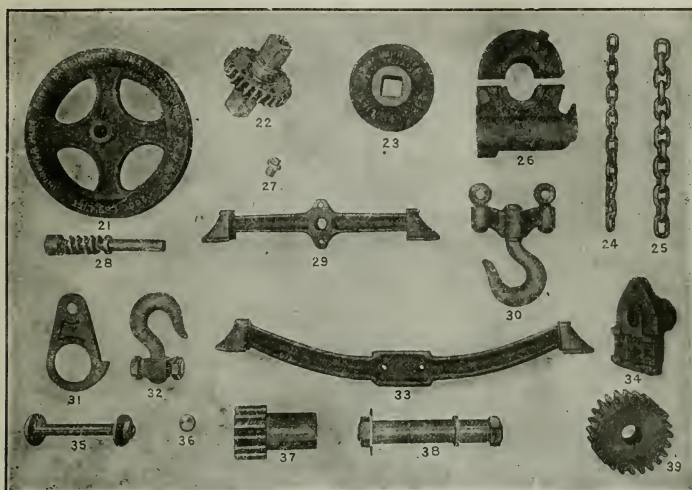
FLAT RAIL TRAVELERS

Capacity in lbs.	Standard Size of I-Beam in inches	Regular Lift in feet	SCREW				
			Shortest Distance Beam to Hook* in inches	Price Plain	Price Geared	Price Extra Lift per foot Plain	Price Extra Lift per foot Geared
500	3x 1/2	8	17 1/2	\$33.50	\$44.50	\$1.10	\$1.60
1,000	3x 1/2	8	19 1/4	36.00	47.00	1.20	1.70
2,000	4x 3/4	8	21 3/4	44.00	56.00	1.30	1.80
3,000	4x 3/4	8	23	54.00	66.00	1.40	1.90
4,000	4x 3/4	9	25 3/8	67.00	80.00	1.44	1.94
6,000	6x1	10	36 3/8	96.00	110.00	1.50	2.00
8,000	6x1	10	36 5/8	116.00	130.00	1.70	2.20

*From top of rail to inside of hook.

PARTS OF HARRINGTON IMPROVED SCREW HOISTS

1894 PATENT
500 to 6,000 Lbs. Capacity



REVISED LIST TO TAKE EFFECT JULY 1, 1909

Prices of Parts of Improved Screw Hoists, Model of 1894
500 to 6,000 Lbs. Capacity

List No.	Name	500	1,000	2,000	3,000	4,000	6,000
21	Hand Wheel	\$1.00	\$1.50	\$1.50	\$2.50	\$2.80	\$5.00
22	Worm Gear and Hub.....	3.00	3.20	4.00	5.00	6.00	7.00
23	Load Wheels (2).....	1.60	1.80	2.00	3.00	3.50	6.00
24	Hand Chain, per ft.....	.25	.25	.25	.25	.25	.25
25	Load Chain, per ft.....	.30	.35	.40	.45	.47	.50
26	Case and Cap.....	1.50	2.00	2.50	4.00	5.50	9.50
27	Thrust Screw .....	.30	.40	.40	.50	.60	1.50
28	Worm	1.00	1.50	1.50	2.50	3.20	6.50
29	Hand Chain Guard†.....	.70	.90	.90	1.20	...	...
30	Bottom Hook and Swivel.....	1.70	2.00	2.60	3.50	4.10	5.20
31	Side Plates (2).....	.60	.80	.90	1.30	1.80	4.00
32	Top Hook and Swivel.....	1.70	2.00	2.60	3.50	4.10	5.20
33	Hand Chain Guard†.....	...	...	...	...	1.50	2.00
34	Gland .....	...	...	...	...	2.00	3.00
35	Center Bolt and Washers.....	.30	.40	.50	.55	.60	1.00
36	Thrust Washer .....	.20	.20	.20	.25	.30	.50
..	Hand Chain, Regular Lift.....	4.25	4.25	4.25	4.50	5.00	5.50
..	Load Chain, Regular Lift, with Hook and Swivel.....	7.10	8.56	10.10	11.94	13.97	17.20

†Old Style Hand Chain Guards can be furnished for this model, if desired.

PARTS OF HARRINGTON IMPROVED SCREW HOISTS

1894 PATENT

8,000 to 30,000 Pounds Capacity



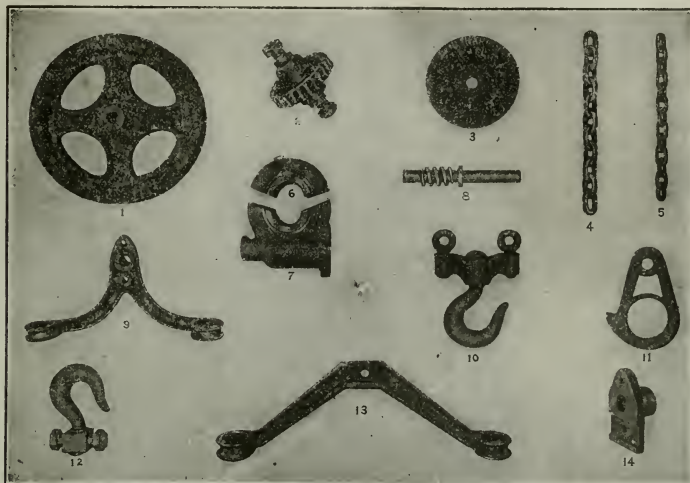
REVISED LIST TO TAKE EFFECT JULY 1, 1909

Prices of Parts of Improved Screw Hoists, Model of 1894

8,000 to 30,000 Pounds Capacity

List No.	Name	8,000	10,000	12,000	16,000	20,000	30,000
21	Hand Wheel	\$ 7.00	\$ 8.00	\$11.50	\$12.00	\$12.00	\$12.00
22	Worm Gear and Hub.....	9.00	16.00	16.50	23.00	23.00	23.00
23	Load Wheels (2).....	8.50	10.50	15.00	18.00	20.00	18.00
24	Hand Chain, per ft.....	.30	.35	.35	.35	.35	.35
25	Load Chain, per ft.....	.55	.75	.90	1.10	1.10	1.10
26	Case and Cap.....	11.00	16.00	16.00	20.00	20.00	20.00
27	Thrust Screw	1.50	2.00	2.00	2.00	2.00	2.00
28	Worm	7.00	12.00	12.00	16.00	16.00	16.00
30	Bottom Hook and Swivel.....	11.00	13.50	19.50	23.00	35.00	44.00
31	Side Plates (2).....	6.00	10.00	10.00	14.00	14.00	30.00
32	Top Hook and Swivel.....	11.00	13.50	19.50	23.00	35.00	44.00
33	Hand Chain Guard.....	3.00	4.00	7.00	8.00	8.00	8.00
34	Gland	3.50	5.00	5.00	6.00	8.00	6.00
35	Center Bolt and Washers.....	1.50	2.50	2.50	3.00	3.00	3.00
36	Thrust Washer .....	.50	1.00	1.00	1.00	1.00	1.00
37	Pinion .....	.....	.....	.....	5.00	7.00	5.00
38	Stud .....	.....	.....	.....	3.00	3.00	3.00
39	Gear .....	.....	.....	.....	5.00	7.00	5.00
45	Lower Idler Wheels (2) .....	.....	.....	.....	.....	.....	10.00
46	Lower Idler Chain Guide .....	.....	.....	.....	.....	.....	4.00
47	Load Chain Guide and Stripper .....	.....	.....	.....	.....	.....	4.00
..	Hand Chain, Regular Lift.....	6.90	9.80	10.15	10.15	10.15	19.60
..	Load Chain, Regular Lift, with Hook	24.20	35.25	45.60	54.90	66.90	110.00

PARTS OF HARRINGTON SCREW HOIST

OLD STYLE
1876 Patent

REVISED LIST TO TAKE EFFECT JULY 1, 1909

Prices of Parts of Old Style Screw Hoist, Model of 1876

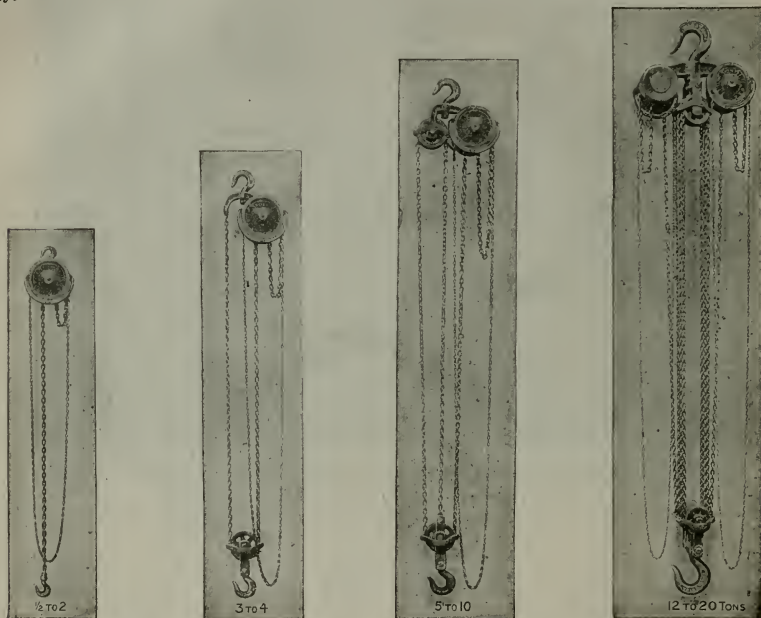
List No.	Name	500	1,000	2,000	3,000	4,000	6,000
1	Hand Wheel	\$1.00	\$1.50	\$1.50	\$2.50	\$2.80	\$5.00
2	Worm Gear and Hub.....	3.00	3.20	4.00	5.00	6.00	7.00
3	Load Wheels (2).....	1.60	1.80	2.00	3.00	3.50	6.00
4	Load Chain, per ft.....	.30	.35	.40	.45	.47	.50
5	Hand Chain, per ft.....	.25	.25	.25	.25	.25	.25
6 & 7	Case and Cap.....	1.50	2.00	2.50	4.00	5.50	9.50
8	Worm	1.00	1.50	1.50	2.50	3.20	6.50
9	Hand Chain Guard.....	.70	.90	.90	1.20	...	...
10	Bottom Hook and Swivel.....	1.70	2.00	2.60	3.50	4.10	5.20
11	Side Plates (2).....	.60	.80	.90	1.30	1.80	4.00
12	Top Hook and Swivel.....	1.70	2.00	2.60	3.50	4.10	5.20
13	Hand Chain Guard.....	...	...	...	...	1.50	2.00
14	Gland .....	...	...	...	...	2.00	3.00

List No.	Name	8,000	10,000	12,000	16,000	20,000
1	Hand Wheel	\$ 7.00	\$ 8.00	\$11.50	\$11.50	\$11.50
2	Worm Gear and Hub.....	9.00	16.00	16.00	23.00	23.00
3	Load Wheels (2).....	8.50	10.50	15.00	18.00	24.00
4	Load Chain, per ft.....	.50	.75	.90	1.10	1.10
5	Hand Chain, per ft.....	.30	.35	.35	.35	.35
6 & 7	Case	11.00	16.00	16.00	20.00	20.00
8	Worm	7.00	12.00	12.00	16.00	17.00
9	Hand Chain Guard.....	...	...	...	...	...
10	Bottom Hook and Swivel.....	11.00	13.50	19.50	23.00	35.00
11	Side Plates (2).....	6.00	10.00	10.00	14.00	15.00
12	Top Hook and Swivel.....	11.00	13.50	19.50	23.00	35.00
13	Hand Chain Guard.....	3.00	4.00	7.00	7.00	7.00
14	Gland	3.50	5.00	5.00	5.00	6.00

YALE TRIPLEX BLOCKS

SPUR GEARED. HIGHEST EFFICIENCY

The Yale Triplex Block is rated on a capacity basis of the long ton and each rated ton is tested at the factory with a fifty per cent overload or 3,360 lbs. This assures great safety and reserve capacity.



YALE TRIPLEX BLOCKS

From Hook to Hook a Line of Steel

LIST OF BLOCKS

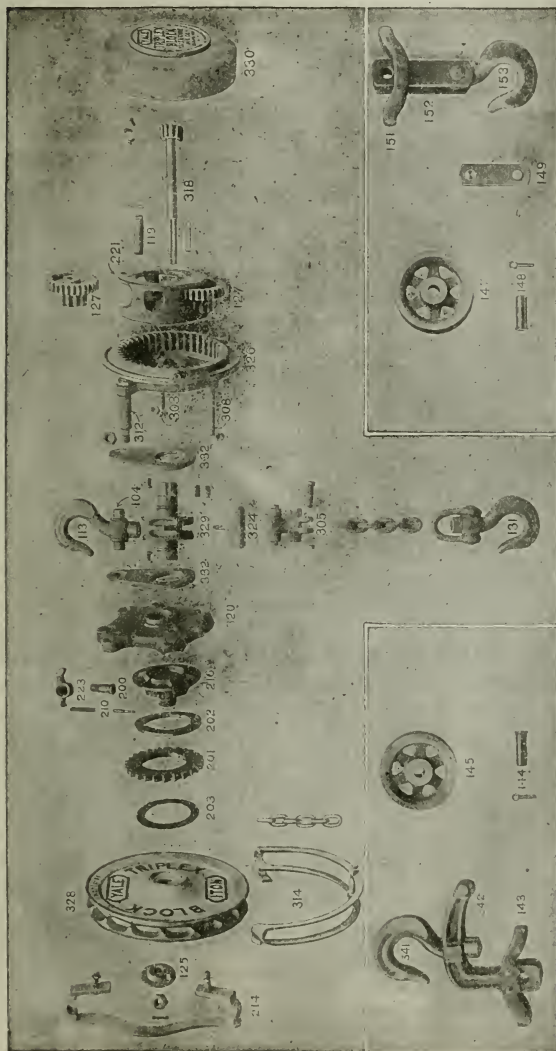
Capacity in Tons	Price Complete	Regular Hoist in feet*	Reach in feet and inches	Extra Hoist Price per foot	Minimum Distance between Hooks in inches	Net Wt. in lbs.	Chain Pull in lbs. to Lift Full Load	Feet of Chain Handled to Lift Load one foot	Length of Chain in Regular Hoist	
			ft. in.						Load, ft.	Hand, ft.
1/2	\$35.00	8	9 3	\$0.90	13	58	62	21	9	16
1	45.00	8	9 5	.95	16	91	82	31	9	16
1 1/2	60.00	8	9 7 1/2	1.00	18	131	110	35	9	16
2	70.00	9	11 0	1.05	21	200	120	42	10	18
3	90.00	10	12 8	1.50	32	206	114	70	24	22
4	110.00	10	13 1	1.60	37	293	124	84	25	24
5	140.00	12	15 9	2.15	45	407	110	126	44	29
6	165.00	12	15 10	2.15	46	407	130	126	44	29
8	200.00	12	16 3	2.70	49	497	135	168	58	30
10	240.00	12	16 9	3.25	54	606	140	210	72	30
12	300.00	12	16 9	4.30	54	847	130†	126†	93	30
16	360.00	12	17 1	5.40	62	1,043	135†	168†	117	30
20	425.00	12	18 5	6.50	70	1,350	140†	210†	141	30

*Figures denote height in feet which blocks with regular lengths of chain will hoist above level on which operator stands.

†For each hand chain.

YALE TRIPLEX BLOCK PARTS

MODEL SS



Used on Large Blocks only at Top 3 Tons and Larger

Used Only on Large Blocks at Bottom 3 Tons and Larger

HOW TO ORDER YALE TRIPLEX PARTS

Always state whether for "1898 Model" or "Model SS." This is marked on the Gear Cover. Parts 104 to 223 are the same in both models—parts 303 to 332 differ in 1898 Model and Model SS.

Always give capacity of block.

When in doubt about the model or capacity of part send us the old part to be duplicated. Put your name on it so we can identify same on arrival. When the hand wheel or gear case is marked "Quick Speed" always specify "Quick Speed," and mention SS or 1898 Model.

LIST OF PARTS AND PRICES ON NEXT PAGE

PRICES FOR PARTS OF YALE TRIPLEX BLOCKS—MODEL SS

These parts are all illustrated on the preceding page

In ordering parts state whether for "1898 Model" or "Model SS." Parts 113 to 223 are the same in both models. Parts 303 to 332 differ in "1898 Model" and "Model SS."

List No.	Name	½ Ton	1 Ton	1½ Tons	2 Tons	3 Tons	4 to 20 Tons
Parts Interchange in "1898 Model" and "Model SS"	104 Top Cross Head.....	\$1.00	\$1.40	\$2.00	\$2.40	...	...
	113 Top Hook and Nut.....	1.00	1.40	1.80	2.00	...	...
	119 Gear and Pinion Pins, each...	.40†	.60	.70	.80	\$0.70	\$0.80
	125 Check Washer .....	.40	.50	.70	.90	.70	.90
	127 Gear and Pinions, each.....	.80†	1.10	1.40	1.60	1.40	1.60
	131 Lower Swivel Hook.....	1.50	2.30	3.20	5.50	...	...
	200 Pawl Stud .....	.40	.40	.50	.50	.50	.50
	201 Ratchet Disc .....	.80	1.00	1.40	1.50	1.40	1.50
	202 Leather Disc .....	.40	.40	.50	.60	.50	.60
	203 Galvanized Iron Disc.....	.40	.40	.50	.60	.50	.60
	210 Pawl Spring .....	.20	.20	.30	.30	.30	.30
	214 Strap Hand Chain Guide.....	.75	1.20	1.50	1.80	1.50	1.80
	216 Disc Hub	1.80	2.30	3.20	4.20	3.20	4.20
	221 Pinion Cage	1.60†	2.10	3.20	4.20	3.20	4.20
	223 Pawl .....	.20	.20	.30	.30	.30	.30
	303 Small Separator .....	.40	.50	.60	.70	.60	.70
	304 Top Cross Head.....	1.00	1.40	2.00	2.40	...	...
	305 Load Chain Guide.....	.30	.30	.40	.50	.40	.50
	308 Load Chain Guide Bolt.....	.20	.20	.30	.40	.30	.40
	312 Large Separator .....	.60	.70	.80	1.00	.80	1.00
	314 Continuous Hand Chain Guide..	1.50	2.00	2.50	3.00	2.50	3.00
Parts differ in "1898 Model" and "Model SS"	318 Driving Pinion	3.00†	4.00	5.00	6.00	5.00	6.00
	320 Ratchet Case	2.50	3.50	4.50	5.50	4.50	5.50
	324 Stripper .....	.30	.40	.50	.50	.50	.50
	326 Internal Gear	2.40	3.20	5.00	6.00	5.00	6.00
	328 Hand Wheel	1.80†	2.30	3.00	3.60	3.00	3.60
	329 Load Sheave	2.00	3.20	4.75	6.35	4.75	6.35
	330 Gear Cover	1.20	1.50	1.80	2.10	1.80	2.10
	332 Suspension Plate, each.....	1.50	2.00	2.50	3.00	2.50	3.00
	Load Chain, Steel, ft.....	.40*	.45*	.50*	.55*	.50*	.55*
	Hand Chain, " ".....	.25	.25	.25	.25	.25	.25

PARTS FOR YALE TRIPLEX BLOCKS—3 TON AND LARGER

No.	3 Ton	4 Ton	5 Ton	6 Ton	8 Ton	10 Ton	12 Ton	16 Ton	20 Ton
341	\$3.00	\$5.00	\$6.00	\$7.00	\$12.00	\$15.00	\$24.00	\$32.00	\$65.00
342	6.35	14.30	16.60	20.00	25.00	28.00	32.00	40.00	64.00
143	...	...	4.80	7.00	8.00	9.00	10.00	11.50	13.00
144	...	...	1.00	1.50	2.00	2.50	3.50	4.00	5.50
145	...	...	3.00	4.50	5.00	5.50	5.50	5.50	5.50
147	3.00	4.50	4.50	6.00	6.00	7.00	7.00	7.00	7.00
148	.80	1.30	1.50	2.00	2.50	3.00	4.00	5.00	6.50
149	...	...	4.00	6.00	7.00	8.00	...	...	...
151	3.50	4.00	5.00	7.00	8.00	10.00	12.00	13.50	15.50
152	3.20	5.00	7.00	9.00	11.00	13.00	19.00	24.00	32.00
153	3.00	5.00	6.00	7.00	12.00	15.00	24.00	32.00	65.00
341	Top Hook		145	Top Sheaves		151	Bottom Guards and Guides		
342	Top Yoke		147	Bottom Sheave		152	Bottom Side Plates and Crosshead		
143	Top Guard and Guides		148	Bottom Sheave Pin		153	Bottom Hook		
144	Top Sheave Pin		149	Becket Straps					

*In ordering Load Chains specify whether or not hook is required.

†Parts should be specified "Quick Speed" for blocks so marked on the gear cover.

Always give size of block. Parts 329 and 221 are a driven fit. In assembling see that the locating holes in No. 127 line up at the center.

If parts are for Trolley Blocks, specify model, capacity and size of I-beam.

YALE DUPLEX BLOCKS

SCREW GEARED

The Yale Duplex is the popular type of the Yale Blocks and ranks next in efficiency to their Triplex. It is both light and powerful. The hand chain guides are so placed that the operator can stand clear of the load without wasting energy in dragging the chain through the guides. The safety load chain guides prevent slipping, and the swivel connections prevent fouling of the chain. The bronze worm wheels and steel worms have hardened and ground thrust bearings and run in oil.

Capacity in Tons	Price Complete	*Regular Hoist in feet	Extra Hoist Price per foot	Minimum Distance between Hooks in inches	†Reach in feet and inches		Net Wgt. in lbs.	‡Chain Pull		Length of Chain in Regular Hoist	
					ft.	in.		lbs.	feet	Load feet	Hand feet
1/2	\$25.00	8	\$1.00	13	9	1	43	68	40	18	16
1	30.00	8	1.10	16	9	4	57	87	59	18	16
1 1/2	40.00	8	1.20	19	9	7	76	94	80	18	16
2	50.00	9	1.30	21	10	9	104	115	93	20	18
3	75.00	10	1.50	25	12	1	180	132	126	24	21
4	95.00	10	1.60	29	12	5	215	142	155	24	21
5	140.00	12	2.40	31	14	7	330	145	195	30	26
6	180.00	12	2.50	33	14	9	320	145	252	55	26
8	210.00	12	2.70	36	15	0	380	160	310	55	26
10	275.00	12	3.25	45	15	9	555	160	390	57	26

*Figures denote height in feet which blocks, with regular lengths of chain, will hoist from level on which operator stands. Extra lengths of chain should be ordered when it is desired to hoist higher. No deduction is made for blocks with less than the regular length of chain.

†The "Reach" is the sum of the "Hoist" and the "Minimum Distance between Hooks." When hung at this height to lift the full hoist above the floor the hand chain of Triplex or Duplex blocks hangs down to within 18 inches of the floor.

‡Figures denote the pull in pounds required to lift the full load, and the number of feet of hand chain which must be handled to lift the load one foot.

It is absolutely impossible for the load chains to slip, because these safety guides prevent it.

PARTS FOR YALE DUPLEX BLOCKS

When Ordering give Name and Number of Parts and also the Size of the Block and its Shop Number, Stamped Near the Top Hook

These parts are illustrated at top of next page.

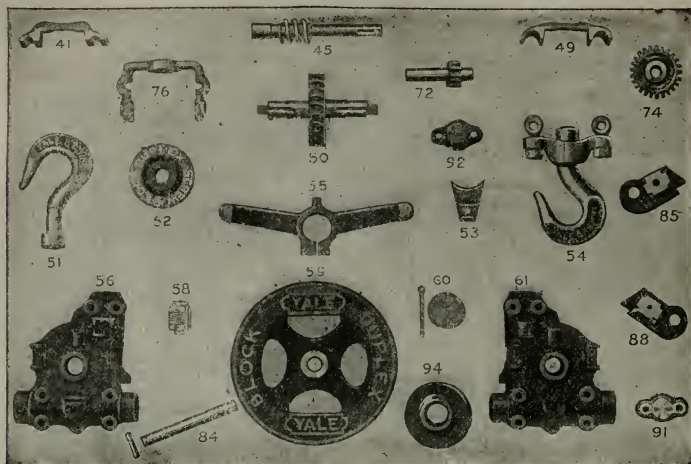
PARTS 1/2 TO 5 TONS—Parts for Larger Sizes Listed on Next Page

List No.	Name	1/2 Ton	1 Ton	1 1/2 Ton	2 Ton	3 Ton	3 1/2 Ton	4 Ton	5 Ton
41	Load Chain Guide...	\$0.40	\$0.50	\$0.60	\$0.70	\$1.00	\$1.20	\$1.40	\$1.60
45	Worm and Shaft...	3.00	3.50	4.00	4.50	5.00	6.00	7.00	10.00
49	Load Chain Guard...	.30	.40	.50	.60	.70	.80	.90	1.00
50	Worm Wheel...	3.50	4.00	5.00	6.00	7.00	9.00	11.00	15.00
51	Top Hook...	1.00	1.40	1.80	2.40	3.00	4.00	5.00	6.00
52	Load Sheave, per pair	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00
53	Strippers, per pair...	.30	.40	.50	.60	.70	.80	.90	1.00
54	Bottom Hook Swivel and Eye Bolts...	2.00	2.50	3.00	3.50	4.50	5.00	6.00	8.00
55	Hand Chain Guide...	.90	1.00	1.30	1.80	2.00	2.40	2.60	2.80
56 } 61 }	Housing, each half...	2.50	3.00	4.00	5.00	6.00	7.00	10.00	15.00
58	Friction Plug...	1.20	1.40	1.70	2.00	...	...	...	...
59	*Hand Wheel...	1.50*	1.60*	2.50*	3.00*	3.50	4.00	4.50	5.00
60	Friction Plug Cover...	.30	.30	.40	.50	...	...	...	...
72	Pinion Shaft...	...	...	...	...	4.00	4.20	4.40	4.60
74	Gear...	...	...	...	...	1.60	1.80	2.00	2.20
91	Friction Plug Cover...	...	...	...	...	.50	.50	.50	.50
92	Friction Plug...	...	...	...	...	2.50	3.00	3.50	4.00
	†Hand Chain, per ft...	.25†	.25†	.25†	.25†	.25	.40	.40	.40
	Load Chain, per ft...	.37 1/2	.40	.42 1/2	.45	.50	.55	.55	.60

*In ordering Hand Wheels or Hand Chain note number of pockets for chain links in rim of wheel.

†Welded hand chain for old model Blocks 37 1/2 c per foot for 1/2, 1 1/2 and 2 ton sizes.

PARTS FOR YALE DUPLEX BLOCKS



When ordering, give name and number of parts, and also size of Block and its shop number, stamped near the top hook.

PARTS OF DUPLEX BLOCKS, 6 TO 10 TONS

List No.	Name	6 Ton	7 Ton	8 Ton	10 Ton
41	Load Chain Guide.....	\$ 1.70	\$ 1.80	\$ 1.90	\$ 2.50
45	Worm and Shaft.....	12.00	16.00	18.00	22.00
49	Load Chain Guard.....	1.10	1.20	1.30	1.40
50	Worm Wheel	16.00	18.00	20.00	25.00
51	Top Hook	7.00	8.00	12.00	15.00
52	Load Sheave, per pair.....	5.50	6.00	8.00	9.00
55	Hand Chain Guides.....	3.00	3.00	3.00	4.00
56 & 61	Housing, pair	32.00	36.00	40.00	60.00
59	Hand Wheel	5.00	5.00	6.50	7.00
72	Pinion Shaft	4.80	5.00	5.20	6.00
74	Gear	2.30	2.40	2.50	3.00
76	Bottom Guides, per pair.....	4.50	5.00	6.00	7.00
84	Clevis Pin .....	.50	.60	.70	1.00
85 & 88	Strippers, per pair.....	1.50	2.00	2.50	3.50
87	Bottom Hook, Swivel and Eye Bolts	12.00	16.00	20.00	25.00
91	Friction Plug Cover.....	.50	.50	.60	.60
92	Friction Plug	4.20	4.40	4.60	5.40
94	Bottom Sheaves, per pair.....	3.00	4.00	6.00	7.00
..	Load Chain, per ft.....	.50	.55	.55	.60
..	Hand Chain, Welded, per ft.....	.40	.40	.40	.40

PNEUMATIC HOISTS

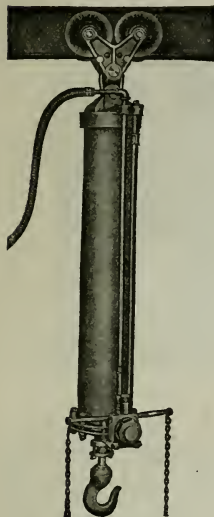


Fig. F. B. 107
Class A and G

The design of these various types of Air Hoists has been made to secure strength, durability, lightness, safety, dependability, low maintenance cost, accessibility of all working parts and the best possible speed control.

Weight is minimum, less load to hang, less effort to move.

Strength is maximum, no unsafe loads suspended above your workmen.

Length.—Minimum, horizontal hoists especially adapted to limited headroom.

Styles.—Various styles of pendant, bracketed and rope compounded hoists.

Pressures.—Hoists are suitable for pressures as high as 110 pounds.

Capacities.—Up to 20,000 pounds at 80 pounds air pressure. Always make allowance for at least 10 per cent possible drop in your air pressure.

Valve.—The Curtis patented hoist valve is of the disc type, self-grinding, perfectly tight, wears slowly and remains tight after years of constant use.

Cylinders.—Made of steel tubing, ground and polished on the inside, giving maximum strength with the least possible weight.

Upper Heads.—Cast steel—screwed to cylinders—for pendant hoists.

Rear Heads.—Steel, bolted to screw rings—for bracketed hoists.

Stuffing-box Heads.—Cast steel, with gland and die cast piston rod bushing on small sizes—brass bushing on large sizes. Heads bolted to screw rings.

Rings.—Cast steel, screwed to cylinder, plain, bracket or plate type.

Piston Leathers.—Special processed hydraulic leather—air tight.

Removable Pistons.—Leathers renewed by unbolting rear head on bracketed hoists or lower head on pendant hoists without dismantling hoists.

CURTIS PENDANT AIR HOISTS—Class A and G (Patented)

Nominal inside diameter of hoist.	Capacity in lbs. at 80 lbs. air pressure, 10% allowance for friction.	Cubic feet of free air required to lift 1 in. at 80 lbs. air.	Weights of Hoist 4 foot lift			Weight each add'l ft.		CLASS A	CLASS G	Price of Extras for either Class A or G		
			Net pounds.	Crated (Domestic.)	Boxed (Foreign)	Net lbs. 1 ft. additional lift.	1 ft. additional lift boxed (Foreign)			Additional Price each ft. extra over 4 ft. lift.	For each plain speed box added	For each Cushion with its speed box
4	861	.54	80	105	125	11	20	\$52.00	\$56.00	\$ 5.00	\$10.00	\$24.00
6	1,366	.85	125	145	200	20	38	60.00	66.00	6.00	10.00	26.00
7	2,050	1.22	150	190	260	24	38	70.00	76.00	7.00	10.00	28.00
8	2,791	1.73	210	230	290	29	40	80.00	83.00	8.00	12.00	30.00
9	3,616	2.24	240	290	370	36	48	96.00	106.00	10.00	12.00	32.00
10	4,592	2.85	320	360	460	42	55	110.00	120.00	10.00	12.00	34.00
12	5,636	3.29	390	420	515	50	65	130.00	140.00	12.00	12.00	36.00
14	8,154	5.06	500	580	660	60	80	150.00	160.00	14.00	14.00	40.00
17	11,270	7.13	700	850	1050	75	100	220.00	230.00	20.00	14.00	44.00
19	16,500	10.10	900	1200	1400	90	120	270.00	284.00	25.00	14.00	50.00
20	20,900	12.50	1100	1500	1700	100	150	320.00	340.00	30.00	14.00	60.00

CLASS A HOISTS are plain or single acting air hoists—and are for simple lifting. **CLASS G HOISTS** are air balanced and are to be specified where delicate control is required. For best speed control add two speed boxes.

FOR AIR COMPRESSORS AND RECEIVERS, SEE INDEX

PNEUMATIC HOISTS

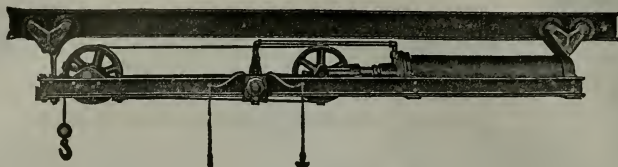


Fig. A. D. 605. Portable Class "K" Hoist, Non-Cushioned, with Pendant Hook and Suspended from Two Plain I Beam Trolleys

CURTIS ROPE GEARED, AIR BALANCED HOISTS—CLASS K

*Stationary type, no hook, no under sheave, no trolley. Open socket on end of rope.

							Extra Prices to be added to K Hoist									
	Nominal Inside Diam. of Hoist inches	Capacity or Rope Size 8 ft. Hoist Can be used up to 110 lbs.	Cv. ft. Free Air Required to Move Rope 1 ft. under 30 lbs. Load at 30 ft. Hoist	Net Weight lbs. of Hoist, No Trolleys. For 4 ft. Lift. Approximate.	Additional Net Weight lbs. of each foot Rope Travel over 4 foot.	CLASS K HOIST* 4 ft. Lift or Less Price	Extra for each foot of Lift, or Part over 4 ft. Lift	Extra for Pendant Hook but no Sheave under	Extra for Sheave under Pendant Hook	Extra for Roller Bearing Side Wheels not Geared	Extra for Roller Bearing Side Wheels Geared	Two Single I Beam Trolleys not Geared Fitted	Two Single I Beam Trolleys one Geared Fitted	Extra for Two Speed Boxes Fitted	Extra for each Cushion and Speed Box	
Geared 2-I	6	800	.61	225	16	\$140.00	\$3.50	\$4.00	\$20.00	\$50.00	\$80.00	\$60.00	\$90.00	\$20.00	\$28.00	
	7	1050	.87	275	20	150.00	4.00	5.00	22.00	54.00	84.00	70.00	100.00	20.00	30.00	
	8	1450	1.12	350	25	160.00	4.50	6.00	22.00	60.00	90.00	80.00	110.00	24.00	32.00	
	9	1900	1.43	450	30	180.00	5.00	7.00	24.00	64.00	100.00	90.00	120.00	24.00	34.00	
	10	2400	1.70	525	34	200.00	6.00	8.00	26.00	74.00	110.00	100.00	130.00	24.00	36.00	
	12	3500	2.53	650	40	250.00	7.50	9.00	28.00	80.00	120.00	110.00	140.00	28.00	40.00	
	14	4800	3.57	900	50	320.00	10.50	10.00	32.00	90.00	130.00	120.00	150.00	28.00	44.00	
	17	7000	5.05	1200	62	400.00	14.00	11.00	40.00	100.00	140.00	130.00	160.00	28.00	50.00	
	19	9000	6.25	1400	70	460.00	18.00	14.00	44.00	110.00	150.00	140.00	170.00	28.00	60.00	
Geared 4-I	6	400	.30	250	11	150.00	3.00	4.00	20.00	50.00	80.00	60.00	90.00	20.00	28.00	
	7	525	.43	300	13	160.00	3.00	4.00	20.00	54.00	84.00	64.00	94.00	24.00	30.00	
	8	700	.56	400	14	170.00	3.50	5.00	20.00	60.00	90.00	68.00	98.00	24.00	32.00	
	9	950	.71	450	15	200.00	4.00	6.00	22.00	64.00	100.00	72.00	102.00	24.00	34.00	
	10	1150	.82	500	17	220.00	4.50	6.00	24.00	74.00	110.00	76.00	106.00	24.00	36.00	
	12	1400	1.25	650	20	270.00	5.00	7.00	26.00	80.00	120.00	80.00	110.00	28.00	40.00	
	14	2400	1.78	900	22	330.00	7.00	8.00	30.00	90.00	130.00	100.00	130.00	28.00	44.00	
	17	3500	2.50	1200	28	400.00	8.50	9.00	34.00	100.00	140.00	110.00	140.00	28.00	50.00	
	19	4500	3.10	1400	30	435.00	10.00	10.00	38.00	110.00	150.00	120.00	150.00	28.00	60.00	
Geared 6-I	6	250	.21	250	8	160.00	2.50	4.00	20.00	50.00	80.00	60.00	90.00	20.00	28.00	
	7	325	.29	300	9	170.00	3.00	4.00	20.00	54.00	84.00	64.00	94.00	24.00	30.00	
	8	450	.38	400	10	180.00	3.00	5.00	20.00	60.00	90.00	68.00	98.00	24.00	32.00	
	9	575	.47	450	11	210.00	3.50	6.00	22.00	64.00	100.00	72.00	102.00	24.00	34.00	
	10	750	.55	500	12	220.00	3.50	6.00	22.00	74.00	110.00	76.00	106.00	24.00	36.00	
	12	1100	.84	650	14	280.00	4.00	7.00	24.00	80.00	120.00	80.00	110.00	28.00	40.00	
	14	1500	1.17	900	17	350.00	5.00	7.00	28.00	90.00	130.00	90.00	120.00	28.00	44.00	
	17	2250	1.67	1200	21	420.00	6.50	8.00	32.00	100.00	140.00	100.00	130.00	28.00	50.00	
	19	2900	2.10	1400	23	480.00	8.00	8.00	36.00	110.00	150.00	110.00	140.00	28.00	60.00	

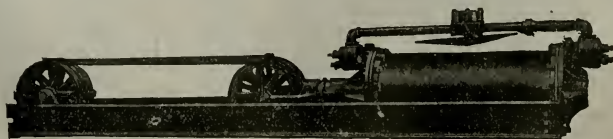


Fig. A. D. 603. Stationary Class "K" Hoist with Cushions and Speed Boxes

SEND US YOUR SPECIFICATIONS WHEN IN THE MARKET FOR HOISTS OF ANY TYPE.

FLAT RAIL TRAVELERS

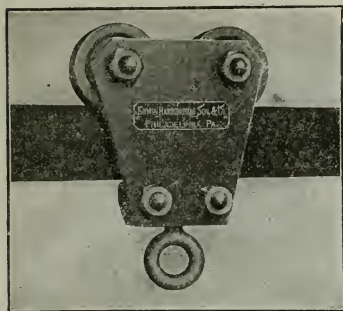


Fig. 122A Plain

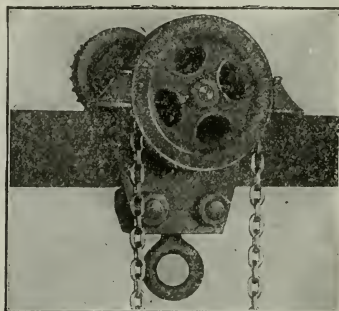


Fig. 122B Geared

The steel plate travelers for flat rail are often more desirable because of the ease of erecting and making curves in the track.

The side plate is made sufficiently heavy to resist bending, and good clearance is allowed for the foot of the hanger. The size of the wheels is as large as ordinary head room will allow, and they all have steel bushings and roller bearings.

In the geared Traveler, both wheels act as drivers, to give the greatest tractive force. They are all made to take apart, for ease in putting on the rail. Clearance dimensions given on request.

PRICE LIST OF FLAT RAIL TRAVELERS

Capacity in pounds	Standard Size of Rail in inches	Greatest Distance Between Hangers in feet	Price of Traveler		Height of Rail from Floor for Regular Hand Chain*	Price of Extra Hand Chain per foot Height	Weight in pounds	
			Plain	Geared			Plain	Geared
500	3x 1/2	6	\$11.00	\$22.00	9' 8"	\$0.50	25	53
1000	3x 1/2	5	11.00	22.00	9' 9"	.50	25	53
2000	4x 3/4	6	14.00	26.00	10' 4"	.50	40	68
3000	4x 3/4	5	14.00	26.00	10' 4"	.50	40	68
4000	4x 3/4	4	17.00	30.00	11' 9"	.50	60	90
6000	6x1	6	25.00	35.00	13' 4"	.50	80	115
8000	6x1	5	25.00	35.00	13' 4"	.50	80	115

*Height to top of rail.

FOR DERRICKS, WINCHES AND HAND POWERS, SEE INDEX

I-BEAM TRAVELERS

To Run on the Lower Flange.



Fig. 121A. Plain

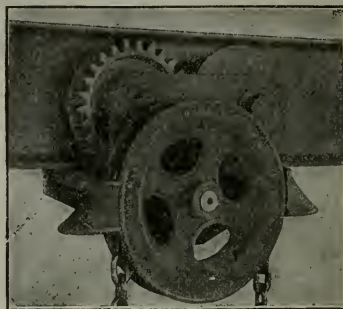


Fig. 121B. Geared

The steel side plates give a maximum strength and at the same time allow light weight, saving of space, and flexibility.

The diameter of the wheels is made as large as the size of the beams used in general practice will allow. They are equipped with steel bushings and roller bearings, and the Geared Travelers are driven on both sides of the beam to prevent friction against the flanges.

Both Plain and Geared Travelers can be widened to suit beams larger than standard, but will be sent regular unless otherwise ordered. Clearance dimensions given on request.

PRICE LIST OF I-BEAM TRAVELERS

Capacity in pounds	Stand- ard Size of I-Beam in in.	Small- est I-Beam Traveler Will Fit	Price of Traveler		Height of Beam from Floor for Regular Hand Chain*		Price of Extra Hand Chain per foot Height	Weight in Lbs.	
			Plain	Geared	ft.	in.		Plain	Geared
1,000	5	5	\$14.00	\$26.00	9	4	\$0.50	36	61
2,000	6	6	16.00	28.00	9	6	.50	43	70
3,000	7	7	19.00	31.00	9	9	.50	68	95
4,000	8	8	22.00	35.00	11	0	.50	75	102
6,000	9	9	27.00	42.00	12	3	.50	109	142
8,000	10	9	33.00	52.00	12	8	.50	115	148
10,000	12	10	43.00	65.00	15	0	.50	166	211
12,000	15	12	55.00	80.00	15	2	.50	213	259
16,000	20	15	70.00	95.00	15	8	.50	347	415
20,000	24	15	85.00	115.00	15	10	.50	357	425

*Height to bottom of beam

"BROWNHOIST" PLAIN AND GEARED TROLLEYS

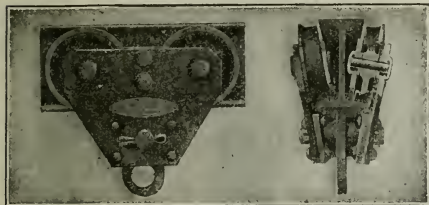


Fig. 1181 Plain

Fig. 1181A Geared

The value of the chain block is greatly increased by the use of trolleys and I-beams. This permits loads to be transported as well as raised.

Standard trolleys are shipped with pins and washers, so that they may be applied to three sizes of I-beams.

The Brownhoist Geared Trolley has all the advantages of the Plain Trolley, and the gear drive allows heavy loads to be moved with great ease and accuracy.

Capacity in Tons	Standard Size of I-Beam inches	Greatest Distance between Supports feet	Smallest Radius for I-Beam curve inches	Diameter of Tread of Wheels inches	Price		Weight in lbs.		Pull on Hand Chain*	
					Plain	Geared	Plain lbs.	Geared lbs.	Plain lbs.	Geared lbs.
1/4	4	13	18	3	\$14.00	.....	25	...	25	..
1/2	5	14	21	3 3/4	16.00	.....	30	...	26	..
1	6	14	21	4 3/4	20.00	\$40.00	50	90	47	15
1 1/2	7	15	30	5 1/2	25.00	45.00	95	140	65	24
2	8	16	36	6 1/2	30.00	50.00	115	170	74	23
3	9	16	42	7 1/4	40.00	60.00	150	180	45	16
4	10	16	48	8 3/4	50.00	70.00	210	350	50	18
5	12	18	54	10	65.00	90.00	270	360	60	20
6	15	22	60	10	80.00	100.00	350	460	70	23
8	20	29	60	12	95.00	110.00	420	540	90	28
10	24	34	60	13	110.00	130.00	550	650	115	35
12	24	23	60	13	110.00	130.00	600	700	150	42
15	24	20	96	18	180.00	220.00	1100	1400	180	44
20	24	16	120	18	200.00	250.00	1200	1500	260	49

*Pull on hand chain to move fully loaded Trolley along Track.



Fig. 1183

"BROWNHOIST" CAST IRON TROLLEYS

These Trolleys are furnished to meet the demand for an efficient low priced trolley.

These Cast Trolleys are light, easy running and durable and will satisfactorily meet the needs of a low cost installation.

Capacity in Tons	Standard I-Beam* in. lbs.	Price			
		Plain Bearing		Roller Bearing	
		Cast Iron	Cast Steel	Cast Iron	Cast Steel
1/2 *	5 9 3/4	\$8.00	\$11.10	.....	.....
1	6 12 3/4	10.50	14.00	\$17.50	\$21.00
1 1/2	7 15	13.50	17.90	22.00	26.40
2	8 18	17.00	22.25	27.00	32.25
3	9 21	.....	.....	37.50	43.65

*Trolleys of same capacity can be furnished for larger sized I-Beams than here shown.



Fig. 1184

"BROWNHOIST" FLAT RAIL TROLLEY

To run on Flat Steel Bars. The plain Trolley is shown in the cut.

The "geared" Trolley is fitted with hand chain and sprocket wheel.

Capacity in Tons	Size of Rail inches	Greatest Distance between Hangers in ft.	Price of Trolleys	
			Plain	Geared
1/4	3x 1/2	6	\$9.00	....
1/2	3x 1/2	5	9.00	....
1	4x 3/4	6	15.00	\$35.00
1 1/2	4x 3/4	5	15.00	35.00
2	4x 3/4	4	15.00	35.00
3	6x1	6	30.00	50.00
4	6x1	5	30.00	50.00

FOR OTHER STYLES OF TROLLEYS, SEE INDEX

MANILA ROPE HOISTS

HALL IMPROVED
SPECIAL SAFETY
HOISTS

Equipped With Improved
Self Adjusting Safety
Locks

The Height of Perfection in
Safety Hoists

This new lock is the simplest safest, most efficient lock ever devised. It adjusts automatically to various sizes of rope used—no wrenches or screw-driver required to adjust the lock. Holds the load in a grip that can't slip. **ROPE NOT INCLUDED.** A complete line of rope is listed in index.



Fig. 9



Fig. 8



Fig. 7

No.	Capacity Pounds	Size of Rope inches	No. of Sheaves	Average Man Can Hoist	List Price Without Rope, each
3	2,000	$\frac{1}{4}$ to $\frac{1}{2}$	3	600 lbs.	\$3.45
6	4,000	$\frac{3}{8}$ to $\frac{3}{4}$	3	650 lbs.	5.00
9	8,000	$\frac{1}{2}$ to $\frac{7}{8}$	3	700 lbs.	8.80
2	1,500	$\frac{1}{4}$ to $\frac{1}{2}$	2	300 lbs.	2.50
5	2,500	$\frac{3}{8}$ to $\frac{3}{4}$	2	350 lbs.	3.75
8	5,000	$\frac{1}{2}$ to $\frac{7}{8}$	2	400 lbs.	6.30
1	400	$\frac{1}{4}$ to $\frac{1}{2}$	1	150 lbs.	1.25
4	1,000	$\frac{3}{8}$ to $\frac{3}{4}$	1	175 lbs.	2.50
7	2,500	$\frac{1}{2}$ to $\frac{7}{8}$	1	200 lbs.	3.75

SURE GRIP STEEL TACKLE BLOCK

Will hold load at any point without fastening the rope.

The Brake Is Absolutely Automatic

The Heavier the Load the Better the Grip

At the same time the brake is susceptible of being disengaged by very slight pressure. The body of block is made of steel plates. The pins are cold rolled steel. The essential castings are malleable iron, making the strongest and safest possible combination of materials, thus affording immunity from accidents in the highest degree. The brake is a fluted wedge dropping between two ropes in such a manner that the load is brought on all the strands of the rope at the same time. The brake does not flatten the rope, consequently the wear upon it is reduced to a minimum.

No.	For Rope	Capacity lbs.	One Man Can Lift lbs.	Tested to lbs.	Price per Set Blocks Only
3	$\frac{3}{8}$ in.	600	300	2,800	\$ 3.00
4	$\frac{1}{2}$ in.	1,000	350	3,800	5.50
5	$\frac{5}{8}$ in.	1,800	400	4,500	7.00
6	$\frac{3}{4}$ in.	2,500	450	5,800	8.50
4 $\frac{1}{2}$	$\frac{1}{2}$ in.	3,000	600	7,000	10.00
5 $\frac{1}{2}$	$\frac{5}{8}$ in.	3,500	700	8,000	12.00
6 $\frac{1}{2}$	$\frac{3}{4}$ in.	5,000	850	9,000	14.00

FOR MANILA AND WIRE ROPE SEE INDEX

CHAIN HOISTS

The average workman in using a Chain Block frequently overloads it to several times its capacity. Although all makes are tested to a liberal factor of safety, such overloading will stretch the chain until its links no longer fit properly in the sheave, thereby causing the links to ride or wedge, making hoisting a burden.

Our experience of over forty years in all types of Chain Hoists has proven this to be the verdict after examination of so-called defective blocks. While all makes of these blocks will lift more than the guarantee on them, no manufacturer can be expected to replace an overloaded block.

WESTON'S DIFFERENTIAL PULLEY BLOCKS

CARPENTER'S DIRECT

They hold the load at any point and cannot run down. One man can lift 1000 lbs.

LIST COMPLETE

Capacity tons	Hoist feet	Shortest Distance between Hooks inches	Length of Chain feet	Net Weight lbs.	Each
1/4	6	17	22	20	\$18.00
1/2	7	21	26	31	21.00
1	8	26	30	53	28.00
1 1/2	8 1/2	32	33	90	36.00
2	9	39	36	128	45.00
3	10	44	38	167	60.00

Allow 4 feet of chain for each extra foot of hoist.

We can furnish these Blocks to hoist any length desired.

LIST OF PARTS FOR DIRECT BLOCKS

Capacity tons	Sheaves		Yokes and Hooks		Pins		Regular Chains Complete each	Extra Chain per ft.
	Top	Bottom	Top	Bottom	Top	Bottom		
1/4	\$3.60	\$0.90	\$3.00	\$2.25	\$0.40	\$0.30	\$10.50	\$0.70
1/2	4.80	1.30	3.75	3.00	.50	.40	12.50	.70
1	6.00	1.50	4.50	3.75	.50	.40	17.00	.75
1 1/2	8.40	1.90	5.50	4.50	.60	.50	21.50	.80
2	12.00	2.25	7.50	5.50	.60	.50	27.00	.85
3	15.60	3.75	11.00	8.00	.70	.60	36.00	1.00

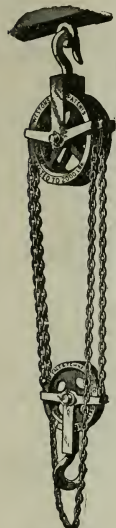


Fig. 100
Differential

PORTABLE CRANE

EASILY MOVED

Always Ready

Prices do not include Hoists

Size No.	Capacity lbs.	Total Height	Total Width	Width Inside Yoke	Depth of Bed	Suspension Eye to Floor	Each
1	1000	7' 6"	4' 1"	3' 5"	13"	7' 6"	\$24.00
2	2000	7' 6"	4' 1"	3' 5"	13"	7' 6"	33.00
3	3000	8'	4' 1"	3' 5"	14"	7' 10"	37.50
4	4000	8'	5'	4' 1"	15"	7' 11"	43.75

We recommend Peerless Hoists to use with the Portable Crane.

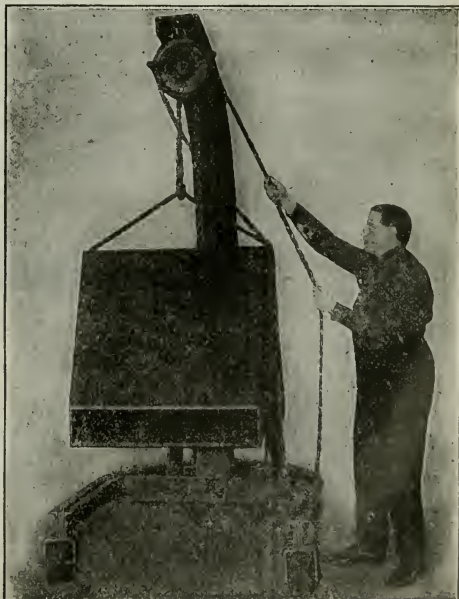


Fig. 123

TRAVELING CRANES

HAND POWER



Fig. 6185. Single Beam with Trolley Inside.

No.	Capacity Tons	Span feet	Distance from Top of Rail to Highest Point of Bridge, inches	Price with Trolley and without Chain Hoist
6185	1½	12 to 15	11 ¾	\$200.00
6186	1½	16 to 19	11 ¾	225.00
6187	1½	20 to 23	11 ¾	250.00
6191	3	18 to 21	16	260.00
6192	3	22 to 25	16	300.00
6193	3	26 to 30	16	350.00
6197	5	18 to 21	19 ½	340.00
6198	5	22 to 25	19 ½	400.00
6199	5	26 to 30	19 ½	475.00
6210	4	20 to 23	26	400.00
6211	4	24 to 27	26	475.00
6212	4	28 to 32	26	550.00
6213	5	20 to 23	29	425.00
6214	5	24 to 27	29	525.00
6216	6	20 to 23	30	475.00
6217	6	24 to 27	30	575.00
6218	6	28 to 32	30	675.00
6219	8	22 to 26	35	650.00
6220	8	27 to 31	35	750.00
6221	8	32 to 36	35	850.00
6222	10	22 to 26	39	700.00
6223	10	27 to 31	39	800.00
6224	10	32 to 36	39	900.00

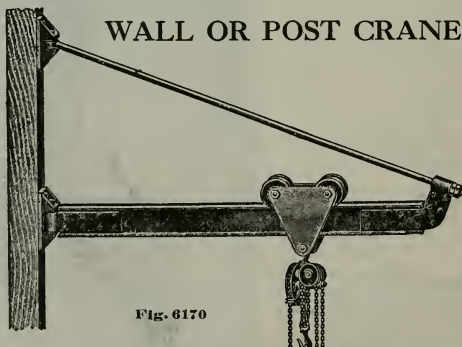


Fig. 6170

WALL OR POST CRANE

No.	Capacity in Tons	Size of Beam inches	Working Radius	Distance from Wall to Extreme Point	Price with Ball- Bearing Trolley without Hoist	Price for Each Additional Foot in Length of Beam
6170	¼	4	11' 7"	13' 4"	\$51.00	\$0.70
6171	½	5	11' 6"	13' 5"	62.00	.90
6172	1	6	11' 5"	13' 6"	74.00	1.10
6173	1½	7	11' 4"	13' 7"	87.00	1.35
6174	2	8	11' 2"	13' 8"	102.00	1.60
6175	3	9	11'	13' 9"	117.00	1.90
6176	4	10	10' 10"	13' 10"	136.00	2.25
6177	5	12	10' 9"	13' 11"	160.00	2.60

FOR CHAIN HOISTS BOTH HAND AND PNEUMATIC, SEE INDEX

WAGON OR STOCK SCALES



Fig. 111. Shallow Pit—Solid Lever Type

Prices given below are exclusive of platform, planking and foundation timber, but include either office fixtures or beam box as desired. Either wood or steel frames may be used but we strongly recommend steel frames.

No.	Capacity Tons	Platform	Single Beam	Double Beam	Compound Beam
100	2	6 x12	\$ 60.00	\$ 65.00	\$ 70.00
101	3	7 x13	65.00	70.00	75.00
102	4	7 x14	70.00	75.00	80.00
103	4	7 ½ x14	85.00	90.00	95.00
104	4	8 x14	95.00	100.00	105.00
105	5	8 x14	100.00	110.00	115.00
106	6	8 x16	180.00	190.00	210.00
107	6	8 x22	200.00	210.00	230.00
108	8	8 x16	190.00	200.00	220.00
109	8	8 x22	210.00	220.00	240.00
110	10	8 x16	190.00	225.00	245.00
111	10	8 x22	220.00	240.00	260.00

Prices of steel frames furnished on application.

The Chicago Wagon or Stock Scale above is fully guaranteed to give entire satisfaction and will comply with all laws governing weights and measures.

BASEMENT OR ASH HOIST

A Labor Saving Device for Removing Ashes, Barrels, Boxes, Etc.

The illustration shows clearly the advantages embodied in a machine of this type.

Is a simple construction consisting of two steel channels connected by a couple of cast iron spreaders which also serve the purpose of guides for the raising and lowering of the telescopic mast.

The frame is secured to the floor and wall by anchor bolts.

This device is simple, easy to operate and takes up very little room in the basement. When not in use the entire machine is below the basement ceiling.

To operate the hoist the mast is raised by the lower crank shown in the illustration and held in the elevated position by a steel pin.

The hoisting mechanism is operated from the sidewalk level—the hoisting head revolves so that the material may be swung to the sidewalk without lifting.



Fig. 0571

The capacity of the mechanism is sufficient for any load which it would be advisable to handle with a machine of this type.

When ordering state the height of the basement ceiling.

List price \$105.00

FOR BUCKETS, SHOVELS AND WHEELBARROWS, SEE INDEX

PLATFORM SCALES

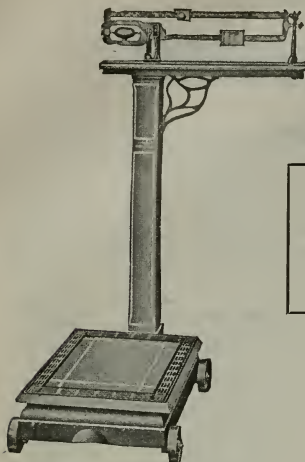


Fig. 615A. "Gibraltar"

For Measures, Pails,
Scoops, Baskets and
Trucks, see Index.

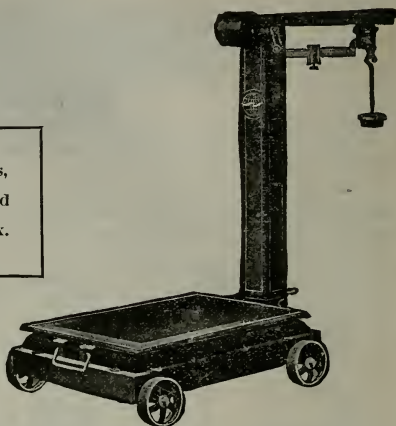


Fig. 615B. "Chicago Portable"—With Wheels

Fig. 615A—GIBRALTER PORTABLE PLATFORM SCALES

Compound Beam. No loose weights. Full capacity is on the beams. Mounted on wheels. Beam on top and easy to get at.

Guaranteed to pass inspection and to comply with all laws governing weights and measures.

No. 930. Capacity 600 lbs., platform 16x25.....\$28.00

No. 961. Capacity 1000 lbs., platform 17x26.....35.00

Fig. 615B—CHICAGO PORTABLE PLATFORM SCALES

WITH SOLID BRASS BEAM, SLIDING POISE AND SET SCREW

Suitable for the weighing of general merchandise in all kinds of trade.

Scales of 1000 pounds capacity and larger have pillar braced with iron.

These scales are all manufactured of the best materials throughout, with carefully tempered steel bearings and pivots, where both strength and extreme hardness are required.

Panel board for platform is hard wood.

With Wheels

Without Wheels

No.	Capacity pounds	Platform inches	Price	No.	Capacity pounds	Platform inches	Price
1116	2,500x $\frac{1}{2}$	24 x32	\$85.00	1100	2,500x $\frac{1}{2}$	24 x32	\$80.00
1118	2,000x $\frac{1}{2}$	24 x32	75.00	1102	2,000x $\frac{1}{2}$	24 x32	70.00
1120	1,500x $\frac{1}{2}$	21 x28	56.00	1104	1,500x $\frac{1}{2}$	21 x28	52.00
1122	1,200x $\frac{1}{2}$	20 x28	49.00	1106	1,200x $\frac{1}{2}$	20 x28	45.00
1124	1,000x $\frac{1}{2}$	19 $\frac{1}{2}$ x27	43.00	1108	1,000x $\frac{1}{2}$	19 $\frac{1}{2}$ x27	39.00
1126	800x $\frac{1}{2}$	17 x26	38.00	1110	800x $\frac{1}{2}$	17 x26	34.00
1128	600x $\frac{1}{4}$	16 x25	33.00	1112	600x $\frac{1}{4}$	16 x25	30.00
1130	400x $\frac{1}{4}$	15 x21	26.00	1114	400x $\frac{1}{4}$	15 x21	23.00

Extra for Double Beam, 2,000 and 2,500 lbs. Scales\$6.00

Extra for Double Beam, 1,500 and 1,200 lbs. Scales 5.00

Extra for Double Beam, 1,000 and 400 lbs. Scales 4.00

UTILITY PORTABLE PLATFORM SCALE

(Not Illustrated)

Single Beam with Wheels. Beams graduated 50 lbs. by $\frac{1}{4}$ lbs.

A good grade Platform Scale. Solid brass beam and sliding poise and guaranteed to pass inspection. An exceptional value for the price asked.

No. 1950. Capacity 600 lbs., platform 15 $\frac{1}{2}$ x22.....Price \$19.00

No. 1951. Capacity 800 lbs., platform 16 x22....." 23.00

Double Beam, extra, \$5.00

SCALES AND BALANCES

STRAIGHT SPRING
BALANCES

Extra Quality—Heavy

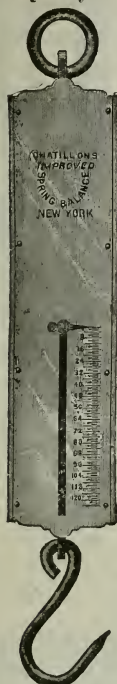


Fig. 100. With Hook

No.	Capacity lbs.	Per doz.
80.	80 lbs. by 1 lb.	\$24.00
90.	100 " " 1 "	42.00
100.	125 " " 1 "	48.00
100 A.	150 " " 1 "	60.00
100 B.	200 " " 2 "	72.00
100 C.	250 " " 2 "	78.00
100 D.	300 " " 2 "	84.00
100 E.	400 " " 4 "	96.00

STRAIGHT SPRING
BALANCES

Fig. 20. With Hook.

No.	Capacity lbs.	Per doz.
2000.	24 lbs. by 1/2 lb.	\$1.50
20 1/2.	12 " " 1/4 "	1.60
20.	25 " " 1/2 "	1.60
30.	50 " " 1 "	3.00

CIRCULAR
WAREHOUSE
BALANCES

Fig. 300. With Hook

No.	Capacity lbs.	Each
300.	100 lbs. by 1/2 lb.	\$ 7.00
310.	150 " " 1/2 "	8.00
320.	200 " " 1/2 "	10.00
330.	250 " " 1 "	11.00
340.	300 " " 1 "	12.00
350.	400 " " 1 "	15.00
360.	500 " " 1 "	20.00
370.	600 " " 1 "	24.00

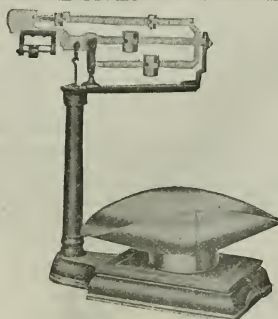


Fig. 799. Colona

THE "COLONA"

A strictly high grade counter scale. Solid brass Beams and Poles. Full capacity on the beams requiring no loose weights and Brass Scoops. Guaranteed to pass inspection and to give entire satisfaction.

No. lbs.	Capacity lbs.	Platform Size inches	Style Scoop	List Price
1101	110	10 1/2 x 13 1/2	Brass Scoop	\$25.00
1101	110	10 1/2 x 13 1/2	Brass Funnel Scoop	27.00

TRUCKS



Fig. 623A. Half Ironed

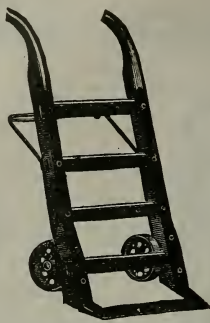


Fig. 623B. Full Ironed



Fig. 623C. Railroad



Fig. 623D Bag

Warehouse and Store Trucks

These Trucks are made of the best second growth hickory, ash or oak lumber. Bolts pass through iron, tenons and handles. All steel parts are heavier than iron parts ordinary used. Axle and collar forged from one piece of steel.

Fig. 623A HALF IRONED TRUCKS

Axles turned and wheels bored. Steel nose, side straps, axle and legs.

No.	Length of Handle	Width inches	Diam. of Wheel inches	Weight lbs.	Each
0	3 ft. 6 in.	19	6 $\frac{7}{8}$	42	\$ 6.00
1	3 ft. 11 in.	19	6 $\frac{7}{8}$	44	7.00
2	4 ft. 4 in.	20	7 $\frac{3}{4}$	56	9.00
3	4 ft. 8 in.	22	8 $\frac{3}{4}$	77	13.00

Fig. 623B FULL IRONED TRUCKS

Axles turned and wheels bored. Steel nose, side straps, axle and legs.

No.	Length of Handle	Width inches	Diam. of Wheel inches	Weight lbs.	Each
0	3 ft. 6 in.	19	6 $\frac{7}{8}$	49	\$ 7.00
1	3 ft. 11 in.	19	6 $\frac{7}{8}$	50	8.00
2	4 ft. 4 in.	20	7 $\frac{3}{4}$	66	10.50
3	4 ft. 8 in.	22	8 $\frac{3}{4}$	87	15.00

Fig. 623C RAILROAD AND PACKING HOUSE TRUCKS

Full ironed, extra heavy. Cross-bars and straps bolted through handles. Axles turned and wheels bored. Steel nose, side straps, and axle.

No. 4. Length of handle, 5 feet; width, 24 inches; diameter of wheel, 10 $\frac{1}{4}$ inches; weight 120 lbs.each \$20.00

No. 5. Length of handle, 5 $\frac{1}{2}$ feet; width, 25 inches; diameter of wheel, 12 inches; weight, 150 lbs.each 24.00

Fig. 623D BAG TRUCKS

With steam-bent handles heavy cast iron nose.

No. 1. Length of handle, 42 inches; width at nose, 11 $\frac{1}{4}$ inches; width at upper bar, 16 $\frac{1}{2}$ inches; axle, $\frac{7}{8}$ inch square; wheel, 6x1 $\frac{3}{4}$ inches; weight, 29 lbs.each \$5.00

No. 3. Length of handle, 48 inches; width at nose, 15 inches; width at upper bar, 20 $\frac{1}{2}$ inches; axle, 1 inch square; wheel, 6 $\frac{7}{8}$ x 2 inches; weight, 58 lbs.each 9.00

WAGON TRUCK

Steel Axles, Wheels Drilled, Axles Turned



Fig. 624A

Size	Each
No. 1. Platform, 3x2 ft.; wt., 115 lbs.	\$14.00
No. 2. Platform, 3 ft. 2 in. x 2 ft. 2 in., wt. 120 lbs.	15.00
No. 3. Platform, 3 ft. 4 in. x 2 ft. 4 in., wt. 126 lbs.	16.00
No. 4. Platform, 3 ft. 6 in. x 2 ft. 6 in., wt. 131 lbs.	17.50
No. 5. Platform, 3 ft. 8 in. x 2 ft. 8 in., wt. 136 lbs.	18.50
No. 6. Platform, 3 ft. 10 in. x 2 ft. 10 in., wt. 141 lbs.	20.00

FOR DOLLIES AND ROLLERS, SEE INDEX

HERCULES STEEL TRUCKS

No.	Full Length		Width inches	Dia. Wheel inches	Dia. Axle inches	Weight lbs.	Each
	ft.	in.					
2	4	7	21	7 ½	1 ½	80	\$ 7.50
3	5		22	8 ½	1 ½	90	9.00
4	5	7	24	10 ¾	1 ½	136	11.25
4A	5	7	24	10 ¾	1 ½	150	13.25
4B	5	5	24	10 ¾	1 ½	150	14.00



Fig. 624B

SKIDS



Fig. 623E

Our Skids are made of the best selected ash, oak, or hickory lumber.

Length feet	Kind	Side Rail's	No. of Cross Bars	Length feet	Kind	Side Rails	No. of Cross Bars
6	Light	1 ¼ x 2 ¾	2	8	Heavy	1 ¾ x 3 ½	3
6	Heavy	1 ¾ x 3	2	9	Heavy	1 ¾ x 3 ½	3
7	Light	1 ¼ x 2 ¾	2	10	Heavy	1 ¾ x 3 ¾	3
7	Heavy	1 ¾ x 3 ¼	2	12	Heavy	1 ¾ x 4	3
8	Light	1 ½ x 2 ¾	3				

Price, light pattern..... per foot \$1.00
 Price, heavy pattern..... " 1.25

Any size under 6 feet, same price as 6 feet.

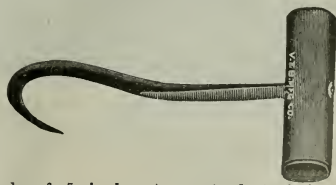


Fig. 623F

BOX TRUCKS

No.	Width inches	Length inches	Wheels inches	Weight lbs.	Each
1	18	18	4x1 ¾	23	\$5.00
2	18	26	4x1 ¾	23	6.00

BOX HOOKS



NEW JUMBO NAIL PULLER

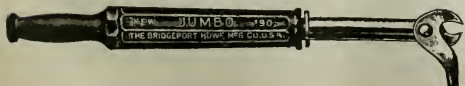


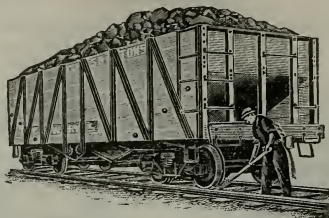
Fig. 563

18 inch.....per dozen \$18.00

Made of 7/16 inch octagon tool steel, long tapered points, hickory handles, steel shank is riveted onto handle. A hook that will stand hard usage.

No. 9. 9 inch under handle..per doz. \$8.00
 No. 12. 12 inch under handle.. " 9.00
 No. 15. 15 inch under handle.. " 10.00

CAR MOVERS—REPLACERS



"SAMSON" CAR MOVER



Fig. 545A

Samson Car Mover, weight 15 lbs.....	each	\$5.00
Samson Locomotive Mover, weight 20 lbs.....	each	6.00
One extra spur with each.		

"BADGER" CAR MOVER—Not Illustrated

The "Badger" has a quick-acting compound leverage which makes it one of the quickest acting movers in use anywhere. It is fitted with double concave spurs which grip the rail firmly, and will not slip even if dull. Handle is hard maple. Length 5½ feet.

Price each \$7.50

Extra Parts for "Badger" Car Movers

Malleable Shoe No. 9.	Price each.....	\$3.00	Large Bolt No. 23.	Price each.....	.10
Socket No. 8.	Price each.....	3.00	Pin No. 24.	Price each.....	.10
Cam No. 7.	Price each.....	1.50	Steel Spurs No. 22.	Price each.....	.50
Clip for Spur No. 16.	Price each.....	.50	Handle No. 20.	Price each.....	2.00
Small Bolt No. 21.	Price each.....	.10			

THE SHELTON CAR MOVER

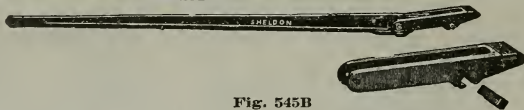


Fig. 545B

It does not slip, works under any style of brake, compound power, wearing part changeable. Weight, 18 lbs.; length, 5 feet.

Price, each, with one extra Heel..... \$5.00

Price, extra Heels, each..... 1.00

Price, extra Heels, each..... .35

Extra Parts for "Samson" Car Movers

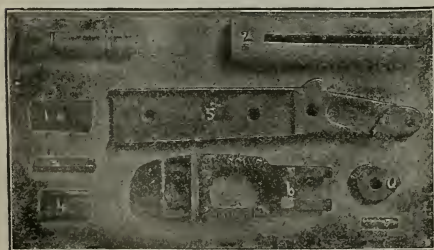


Fig. 545C

	Samson		Locomotive	
	No.	Each	No.	Each
Cam (in end of arm 5)...	0	\$0.20	10	\$0.25
Clamp (to hold spur 3)...	1	.20	11	.20
Wood Handle	2	1.00	12	1.25
Spur (state if to be square or triangular)...	3	.25	13	.25
Spring (that slides on rail)	4	.25	14	.25
Arm (bolted to handle 2).	5	1.25	15	1.50
Shoe (for triangular spur)	6		16	1.50
Shoe (for square spur)...	8		17	....
Steel Pin (goes through cam)	4	....	9	.05

ALDON CAR REPLACERS

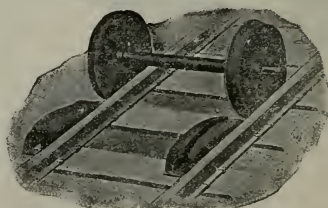


Fig. 545D

Number	1	2	3	4
Wt. per pair, lbs..	200	180	100	50
Material	Cast Steel		Malleable Iron	
Suitable for rails, lbs.	100	85	65	35
Per pair	\$20.00	\$18.00	\$15.00	\$12.50

PORTABLE TRACK

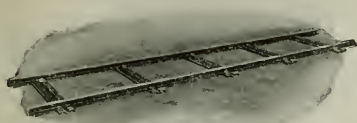


Fig. 950. Straight Section



Fig. 950. Curve Section

Price List

List	Length Section ft.	Size Rail lbs.	24-inch Gauge per ft.	30-inch Gauge per ft.	36-inch Gauge per ft.	Curves, Extra per ft.
No. 950A	15	12	\$0.60	\$0.68	\$0.76	\$0.26
No. 950B	15	16	.78	.86	.94	.30
No. 950C	15	20	.92	1.00	1.08	.40
No. 950D	15	25	1.04	1.12	1.20	.55

Furnished with Corrugated Ties unless otherwise ordered. Can be had with Channel or Flat Ties.



Fig. 955. One-Way Switch



Fig. 955. Two-Way Switch

Price List

List	Gauge inches	Size Rail lbs.	Radius feet.	Length feet	One Way	Two Way
No. 955A	24	12	24 to 30	15	\$46.00	\$52.00
No. 955B	24	16	24 to 30	15	50.00	56.00
No. 955C	24	20	24 to 30	15	65.00	72.00
No. 955D	24	25	24 to 30	15	82.00	94.00
No. 955E	30	12	24 to 30	15	48.00	54.00
No. 955F	30	16	24 to 30	15	52.00	58.00
No. 955G	30	20	24 to 30	15	67.00	75.00
No. 955H	30	25	24 to 30	15	88.00	102.00

9-foot switch with 12-foot radius 15% less than above prices.

We also furnish rail, fish plates, bolts, frogs, ties, switch points and other accessories for equipping industrial railways. Submit your Industrial Railway layouts to us for prices.

"OPEN-TOP" TURNTABLE

No. 960 Open Top Turntable revolves on a center pivot and outside rollers. Is easy to operate and is durably built.

Price List

List	Diameter inches	Track Gauge inches	Weight lbs.	List Price
No. 960A	42	18 to 24	230	\$34.00
No. 960B	48	18 to 30	245	37.00
No. 960C	60	18 to 36	327	46.00
No. 960D	72	18 to 48	340	49.00
No. 960E	84	18 to 48	496	60.00

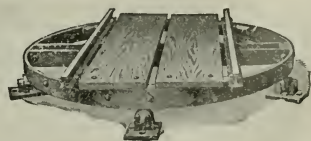


Fig. 960

Equipped with 12-pound rail unless otherwise specified

For complete line of Dump and Flat Cars, Signals, etc., see index.

HAND AND PUSH CARS

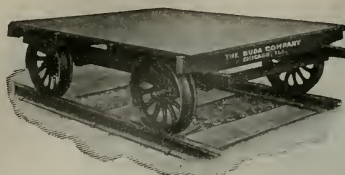


Fig. 6



Fig. 10

PUSH CARS

No. 6. Standard gauge. Platform 7 feet long by 5 feet 7 inches wide. Steel wheels 20 inches in diameter, machine steel axles $1\frac{1}{2}$ inches in diameter. Weight, 500 lbs.

Each \$40.00

Extra Heavy

No. 6 $\frac{1}{2}$. Same dimensions as No. 6. Axles 2 inches. Weight, 700 lbs.

Each \$48.00

Fig. 10. EXTRA HEAVY TRACK LAYING CAR

15-TON CAPACITY RAIL CAR

No. 10 car illustrated, is built in an exceedingly substantial manner. Standard gauge. Capacity, 30,000 pounds; weight, 2,000 pounds. In size the car is 8 feet long by 6 feet 6 inches wide; has 4 by 8 inch sills, the cross sills being plated heavily with iron. Large tool box as shown, and four extra size rollers on end sills. The wheels are of chilled cast iron, 16 inches in diameter, with wide tread—extra heavy and strong.

Each \$120.00

No. 11. Ten-Ton Track-Laying Car. Well built throughout but is of lighter construction than style No. 10, its weight being about 1,350 pounds; capacity 10 tons. Standard gauge. It is 7 feet 8 inches long by 6 feet 3 inches wide; has chilled cast-iron wheels, 16 inches in diameter, $5\frac{1}{2}$ inch tread. The cross sills are strapped with iron and each end sill provided with two rollers. Car is also supplied with box for tools.

Each \$100.00



Fig. 139

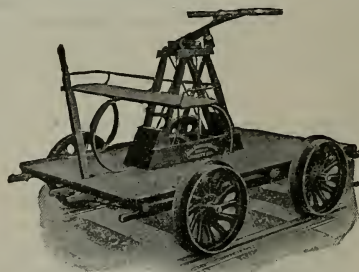


Fig. 5

HAND CARS

No. 1. Standard gauge. Platform 6 feet long by 4 feet 5 inches wide. Steel wheels 20 inches in diameter, axles $1\frac{1}{2}$ inches in diameter. Weight, 525 lbs.

Each \$52.00

No. 139. Standard gauge. Platform 8 feet long by 5 feet 8 inches wide. Steel wheels 20 inches in diameter, axles $1\frac{1}{2}$ inches in diameter. Weight, 700 lbs.

Each \$74.00

Fig. 5. INSPECTION CAR

No. 5 has platform 6 feet long by 4 feet 5 inches wide, steel wheels 20 inches in diameter. Weight, 475 lbs.

Shown in illustration with single end lever; but we furnish it with double end lever if desired. Has hand lever brake in front of seat, to be operated by passengers.

Each \$80.00

FOR OTHER STYLES OF CARS, SEE INDEX

HUNTINGTON STANDARD TRACK GAUGE

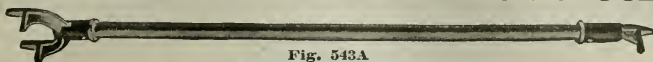


Fig. 543A

WITH AND WITHOUT INSULATION

This is the ordinary pattern Huntington Gauge. The construction is less expensive than the best grade; the heads simply being riveted on and the ends are not milled. Made in insulated and non-insulated styles. Unless specified we ship without insulation.

Price, without insulation, per doz. \$10.00
 Price, with weather-proof insulation, per doz. 15.00

INSULATED CIRCULAR TRACK GAUGE

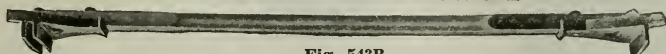


Fig. 543B

This gauge has radial ends and is furnished with and without guard rail attachment.

Price, with guard rail attachment, per doz. \$20.00
 Price, without guard rail attachment, per doz. 18.00

WOODEN TRACK LEVEL



Fig. 543C

Made of white pine with three coats of paint, thus overcoming the tendency to warp and twist shown in common maple levels. It is thoroughly bound in steel. Shows proper distance to set guard rails.

Price, without insulation. per doz. \$15.00
 Price, insulated " 15.00

McMANUS GAUGE AND LEVEL

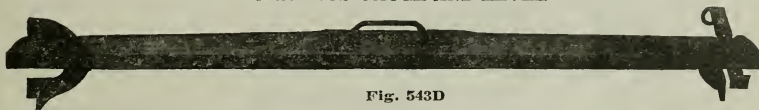


Fig. 543D

The gauge glass has rubber packing, which protects it and greatly lessens the likelihood of levels being broken by rough and careless handling.

Price per doz., \$30.00

JIM CROW RAIL BENDER

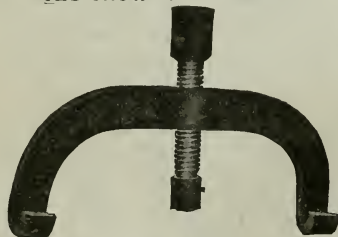


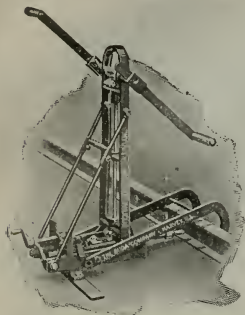
Fig. 543E

Made from best grade of forging steel, with machine cut, square thread, steel screw, either with or without lever. Most compact and simplest device for bending and straightening light rails and car irons.

Size No.	Capacity Size of Rails lbs.	Span of Claws, inches	Diameter of Screw, inches	Hole for Lever, inches	Weight, lbs.	Each
0	16	14	1 3/4	1	40	\$ 7.10
1	25	16	2	1	65	13.70
2	50	20	2 1/4	1 1/8	85	18.20
3	75	24	2 1/2	1 1/4	130	20.20
4	85	28	2 5/8	1 3/8	145	22.70
5	100	28	2 3/4	1 3/8	170	25.20

FOR RAILROAD SPIKES, TRACK BOLTS, ETC., SEE INDEX

TRACK DRILLS, SAND DRIERS AND SALAMANDERS



The illustration shows the "Hyduty" Paulus Track Drill equipped with overclutch hook which is the usual standard for railroad track drilling.

In the "Hyduty" Drill the size of the thrust bearings has been increased and they are fitted with a ball thrust bearing made especially for these drills. The thrust plates are made of high grade steel, thoroughly case hardened, polished and ground. This ball thrust bearing is rated to carry approximately 2200 pounds at normal speeds at which the drill will be operated. The type of construction is of the very best.

The ball retainer is made of pressed steel and separates the balls so that they do not grind against one another.

Imported balls of the highest quality obtainable are used and they are the same quality of balls as those used in the best grade of automobile bearings.

These drills are equipped with chuck for twist or flat drills.

The "Hyduty" Paulus Track Drill is made in four styles:

Style A: The standard over clutch, the most used of all the "Hyduty" drills.

Style B: Equipped with a special hook, to permit drilling close to end of rail. Another feature is a hook which can be lengthened so fish plates can be drilled same time as rail.

Style C: The underclutch, still being used by some roads, but being rapidly displaced by Style A.

Style D: For drilling girder rails and I beams. Hook is of a size to permit drilling to center of 15 inch beam. Has an adjustable screw which supports hook in desired position.

LIST PRICES

With Rich spindle and flat bit Style A, B or C.....	\$50.00
With Rich spindle and flat bit style D.....	51.50
With twist bit spindle and twist bit Style A, B or C.....	40.00
With twist bit spindle and twist bit Style D.....	44.50

G. B. C. SAND DRIER

The wet sand is shoveled into the skirting and as it dries, will of itself run through the holes in the ring at the bottom of the skirting. The amount of sand the stove will dry depends on how wet the sand is and on the condition of the fire in the stove. The stove may be fed with hard or soft coal, coke or wood. Clear sand only can be used. Earth or clay would bake hard, and fail to run through holes in the ring.

The grating adds greatly to the life of the stove by preventing baking of the sand and consequent burning of the castings. It is well worth the additional cost in this respect alone. The whole construction is for service and durability, and we feel confident that there is no stove for the purpose made superior in any respect to the one we herewith present.

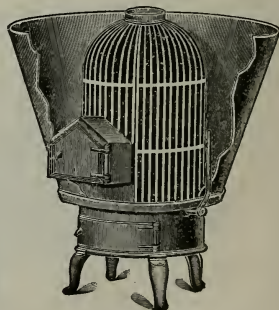


Fig. 548C
Sand Drier with Grating

No.	Tons Capacity Daily	Weight lbs.	Each Without Grating	Grating Each
1	10	1200	\$75.00	\$20.00
2	5	700	60.00	12.00
3	1½	400	40.00	10.00

SALAMANDERS

For drying out new buildings, etc. Body 15x15 inches, total height 30 inches. Heavy steel band legs rounded under pan, to prevent marring floors. Strongly riveted and braced. Heavy cast grate.



Fig. 549F

No. 18 gauge steel, complete without covers.....	\$2.00
No. 16 gauge steel, complete without covers.....	2.50
Extra grates.....	.40
Covers.....	.50
Hood with pipe outlet.....	1.00

ELECTRIC HAMMERS



The Electric Hammer illustrated above is the most successful hammer of its kind. It has been on the market for six years, and in that time has demonstrated conclusively its advantages over hand work.

Owing to its wide range of service, it is extremely popular with all classes of mechanics. The rapidity with which work can be done with these hammers, and the economy of operation combined with the very reasonable price of the machine, appeals to the trade, and thousands of them are in use throughout the world, and are giving the highest satisfaction.

WHERE ELECTRIC HAMMERS ARE USED

All the sizes are used by general contractors, electrical, plumbing, heating, ventilating and in fact all the sub-contractors on fireproof structures; by installers of machinery, elevators, carrier systems, telephones, pneumatic tubes, mail chutes, fire doors, stair treads, railings, ornamental iron work, opera chairs, carpets, etc.; by chief engineers in maintenance work in fireproof buildings; in fact by everyone who has occasion to drill or cut concrete, brick or stone for the installation of expansion bolts, pipes, removal of foundations, openings or the like, channeling plaster, surfacing or bush hammering concrete or stone, removing mortar from terra cotta, brick or stone walls before repointing, etc. They are exceptionally useful to awning hangers.

The U-2 and D-3 sizes are also used in paint mills and the like for redressing stones; for scaling paint from ship bulkheads, scale from condenser tubes and rust and barnacles from buoys, etc.

The U-6 and D-4 are the tools most generally recommended to the contractor. Their weight is such as to make them easily handled and their capacity which enables them to drill up to one inch in diameter in concrete covers most of the requirements of contracting work.

The D-7 and D-9 are used in mines, where electricity is available, for the installation of hangers, for drilling to break down the overhead rock in increasing the size of the entries, etc.

These tools are simple in construction and all the working parts are readily accessible. The handle which has been designed for comfort provides an easy and firm grip for the operator and also contains a rugged quick make and break switch which controls the tool.

Materials and workmanship are of the best and all parts are made to gauges and are interchangeable. Each tool is complete with flexible cord and plug and may be connected directly to any lamp socket.

Direct Current Only

Type No.	Voltage	Power Consumption Watts	Blows per minute	Capacity in Concrete inches	Weight lbs.	Price
D-3	110 or 220	150	4000	$\frac{1}{2}$	14	\$100.00
D-4	110 or 220	220	1800	1	25	125.00
D-7	110 or 220	550	1300	$1\frac{1}{2}$	50	160.00

UNIVERSAL

Operate on D. C. or Alternating Current 25, 30 or 60 Cycles

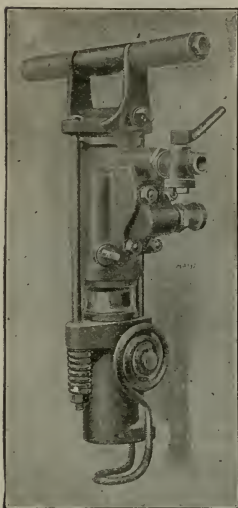
U-2	110 or 220	150	4000	$\frac{1}{2}$	15	\$125.00
U-6	110 or 220	240	1800	1	27	150.00

The capacities given are conservative and approximate. The tools cannot be forced, the strength of the blow is constant and the capacity depends upon economical drilling speeds only. There is no danger of burning out the machines.

Each tool is complete with 10 feet of cord and plug and runs from a lighting socket.

FOR STAR DRILLS, BRICK CHISELS AND BULL POINTS, SEE INDEX

"JACKHAMER" ROCK DRILLS



The "Jackhammer"
Fig. B. C. R. W. 430

canals, railroads and public highways, grading streets, stripping of old pavements and various other municipal improvements comprise important fields in which "Jackhamers" have brought about marked economies.

In quarrying operation, "Jackhamers" are suitable for bench work, block-holing, plug and feather work, etc.

ESSENTIAL DETAILS OF THE "JACKHAMER"

	"BCR-430" Jackhammer	"BCRW-430" Water Jackhammer
Length, inches	19 1/2	20
Cylinder diameter, inches	2 1/4	2 1/4
Stroke, inches	2	2
Steel used, inch	7/8 Hollow	7/8 Hollow
or special Spiral and Twisted, as shown in tables	Hexagon	Hexagon
Size of Air Hose, inch	3/4	3/4
Size of Water Hose, inch		1/2
Weight, lbs.	41	41
List	\$100.00	\$110.00



The "Jackhammer" Mounting

ESSENTIAL DETAILS OF THE "JM-6" AND "JMW-6" MOUNTINGS

Weight, lbs.	63
Weight with Jackhammer, lbs.	104
Length, inches	39 1/4
Height, inches	10 1/4
Distance from center of Drilling Machine to top of mounting, inches	2 3/4
Length of Screw Feed, inches	24 1/4
Slide of Cone on Shell, inches	19 1/4
Maximum travel of Machine, inches	43 1/2
List, each	\$60.00



The "Jackhammer" in the Mounting

The "Jackhammer" (Type BCR-430) may be used as a hand drill or a mounted drill as the nature of the work may require. It is quickly slipped in or out of a simple feed shell mounting (Type JM-6) for either class of service.

Under certain conditions, especially where dust is experienced, the Jackhammer can be supplied with a water feeding device. When so equipped this type is designated Type BCRW-430.

Owing to the fact that it operates successfully by steam or air, steam shovel users find the "Jackhammer" particularly valuable for breaking up large boulders in front of the shovel.

In metal, coal, gypsum, salt and other mining operations the "Jackhammer" has established many records for economical operation. Some of the principal uses are underhand stoping, tunnel trimming, cutting channels in roof for trolley cross-overs, drilling trolley hanger holes, bench work, block-holing, cutting cavities in the rock for pumps, fans, telephones and other apparatus, cutting hitches for timbers, cutting drainage ditches, sinking shafts and winzes, and driving tunnels and gangways.

In farming and reclamation service the "Jackhammer" finds many applications for clearing land, digging irrigation trenches, digging pits, etc.

Coal miners find the "Jackhammer," using spiral steel, far superior to the old style hand auger for boring coal.

"Jackhamers" are admirably adapted for caisson work. Likewise many uses are found for them in drilling rock for building and bridge foundations. The construction of aqueducts, dams,

canals, railroads and public highways, grading streets, stripping of old pavements and various other municipal improvements comprise important fields in which "Jackhamers" have brought about marked economies.

IMPERIAL VERTICAL AIR COMPRESSORS

Type XII, Power Driven

Air Pressure, 60 to 150 Pounds

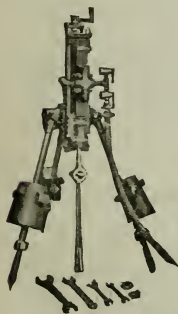
Single stage air, single acting, water jacketed, dust proof enclosed construction, automatic constant level splash lubrication, ring inlet valve on $4\frac{1}{2} \times 5$ size, no inlet valve on smaller sizes, plate discharge valve on all sizes. Can be furnished with air cooled cylinder in smallest size. Water reservoir cooled on all sizes at extra cost.

This machine can be furnished complete with motor and short belt drive attachment as a complete electrical unit.



Size	Piston Displacement	Speed R.P.M.	H. P. Required	DIMENSIONS			WEIGHT		Complete Compressor	Reservoir Cooler	Imperial Un-loader	Tight and Loose Pulleys	Foundation Bolts, Nuts and Washers
				Length	Width	Height	Net	Shipping					
*2 x2½	1.8-3.2	400-700	.6-1.0	14½	10	20	95	150	\$36.00			\$6.50	\$1.00
2½ x3	3.8-6.0	450-700	.95-1.5	17	12	22½	160	220	60.00	\$3.00	\$18.00	7.50	1.00
3½ x4	7.7-12.2	350-550	1.9-3.0	19½	16	29	275	315	82.00	4.50	18.00	13.50	1.00
4½ x5	14.9-23.0	325-500	3.6-5.5	22	20	37½	460	530	115.00	6.50	20.00	14.00	1.00
6 x6	28.6-44.2	300-450	6.8-10.0	28	24	45	830	900	190.00	10.00	30.00	20.00	2.00

*Air Cooled Only—For intermittent service. †Air or Water Cooled.



TRIPOD ROCK DRILLS

For rock drilling in open cut work requiring holes of considerable depth and large diameter the Butterfly and Sergeant Tripod Drills will be found to give highly satisfactory service.

These drills are very simple in design and durably constructed. Contractors and others who have employed these drills have found them very economical to operate and speak well of their performance.

While shown here for tripod work they may be used on bar or column if desired.

SERGEANT "AUXILIARY VALVE" ROCK DRILLS

Symbol indicating size and type.....	A86	B24	C24	D24	D44	E24	E44	F24	F94
Diameter of Cylinder.....in.	2½	2½	2½	3	3	3½	3½	3½	3½
Length of stroke.....in.	5	6	6½	6½	6½	6½	6½	7	7½
Length of drill from end of crank to end of piston.....in.	37	41	48	48½	48½	49	49	52	52½
Depth of hole drilled without change of bit.....in.	15	20	24	24	24	24	24	24	24
Diameter of supply inlet (standard pipe).....in.	¾	¾	1	1	1	1	1	1	1
Approximate strokes per minute with 75 lbs. pressure at drill.....	500	500	375	350	350	350	350	300	300
Depth of vertical hole each machine will drill easily from 1 to.....ft.	6	8	10	14	14	16	16	20	20
Diameter of holes drilled as desired, from.....in.	¾ to 1½	1 to 1½	1½ to 2½	1½ to 2½	1½ to 2½	1½ to 2½	1½ to 2½	1½ to 3	1½ to 3
Diameter of octagon steel used.....in.	¾ or 1	1 & ¾	1½ & 1	1½ & 1½	1½ & 1½	1½ & 1½	1½ & 1½	1½ & 1½	1½ & 1½
Size of shanks (diameter and length).....	¾ x5	¾ x5	1x5½	1½ x6	1½ x6	1½ x6	1½ x6	1½ x6	1½ x6
Numbers of pieces in set of steels to drill holes to depths, as stated.....	5	5	5	7	7	8	8	10	10
Best size of bottle to give plenty of steam at high pressure.....	6 H P	8 H P	8 H P	8 H P	8 H P	10 H P	10 H P	10 H P	10 H P
Drill unmounted, with wrenches and fittings, not boxed.....lbs.	140	190	270	280	285	295	300	405	410
Drill complete, with wrenches and fittings without tripod or column.....	\$170.00	\$200.00	\$220.00	\$240.00	\$240.00	\$260.00	\$260.00	\$280.00	\$290.00

Note:—DRILL COMPLETE includes drill, throttle, oiler and wrenches, and does not include mountings, steels, hose or blacksmith's tools. For full information and prices on tripods, Columns, Hose, Blacksmith's Tools and Steels, see Index.

FOR OTHER STYLES OF COMPRESSORS, AND DRILL RODS, STAR DRILLS, ETC., SEE INDEX

PNEUMATIC TOOLS

CHICAGO DRILLS



Fig. 10F

No. 10F—Little Giant Midget Drill, Non-Reversible

The ideal drill for drilling tell-tale holes in stay-bolts and keeping them open. Can be fitted with throttle when so ordered.

Speed light, 2400 RPM. Length over all, 10 inches.
 Weight 8 lbs.
 List Price \$100.00

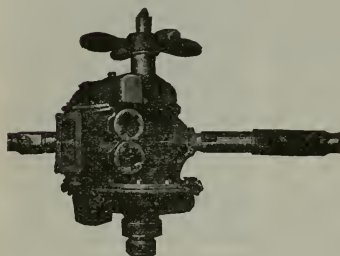


Fig. 1

**Improved Ball-Bearing Little Giant Drills,
Non-Reversible**

Size	No. 1	No. 2	No. 4
Capacity	2 inch	1 1/4 inch	7/8 inch
Size Socket (Morse Taper)	No. 4	No. 3	No. 2
Speed, light	340 RPM	450 RPM	700 RPM
Weight	58 lbs.	41 lbs.	22 1/2 lbs.
List Price	\$160.00	\$150.00	\$140.00

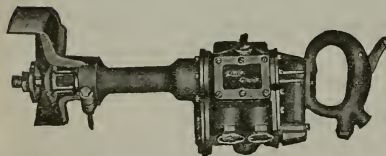


Fig. 4

**No. 4—Improved Little Giant Grinder or Casting
Cleaner**

Grip handle provided with trigger, which when pressed down opens throttle, and is held in that position until released by pressing button at side.

Speed, light 3000 RPM. Length over all, 20 inches. Capacity, 8 inch by 1 inch emery wheel.
 Weight 23 lbs.
 List Price \$160.00



Fig. BW

Little Giant Wood Boring Machines

Size	BW	CW
Capacity	2 inch	4 inch
Speed, light	600 RPM	220 RPM
Weight	14 lbs.	30 lbs.
List Price	\$140.00	\$150.00

PNEUMATIC TOOLS

"CHICAGO" CHIPPING AND RIVETING HAMMERS

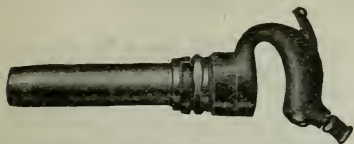


Fig. B K-1. Chipping Hammer

B K-1

Light Chipping and Medium Calking.



Fig. 60. Boyer Riveting Hammer

Weight, 11½ lbs.

List price.....	\$90.00
-----------------	---------

B K-1 X

Light Chipping and Medium Calking Hammer, slightly heavier than the B K-1.	Weight, 12½ lbs.
--	------------------

List price.....	\$90.00
-----------------	---------

B K-2

Medium Chipping and Calking Hammer. Weight, 13 lbs.

List price.....	\$90.00
-----------------	---------

B K-2 X

Medium Chipping and Calking Hammer, slightly heavier than the B K-2.	Weight, 14 lbs.
--	-----------------

List price.....	\$90.00
-----------------	---------

B K-3

Heavy Chipping and Calking, Light Riveting. Weight, 14½ lbs.

List price.....	\$90.00
-----------------	---------

B K-3 X

Heavy Chipping and Calking, Light Riveting, slightly heavier than the B K-3.	Weight, 15 lbs.
--	-----------------

List price.....	\$90.00
-----------------	---------

B K-4

Heaviest Chipping and Calking Hammer. Weight, 15½ lbs.

List price.....	\$90.00
-----------------	---------

No. 60—BOYER

6 inch stroke; capacity up to ⅞ inch rivets. Weight, 22 lbs.

List price.....	\$100.00
-----------------	----------

No. 80—BOYER

8 inch stroke; capacity up to 1½ inch rivets. Weight, 24 lbs.

List price.....	\$100.00
-----------------	----------

No. 90—BOYER

9 inch stroke; capacity up to 1¾ inch rivets. Weight, 25 lbs.

List price.....	\$100.00
-----------------	----------

Fig. 40. BOYER LONG HOLDER-ON

For backing up Rivets

Diameter of piston.....	3 ⅜ in.
-------------------------	---------

Stroke of piston.....	4 "
-----------------------	-----

Shortest length over all, including set.....	15 ⅜ "
--	--------

Distance from center of rivet set to side of Holder-on.....	1 ¾ "
---	-------

Weight.....	25 ½ lbs.
-------------	-----------

Price, each.....	\$50.00
------------------	---------

Short Holder-on.....	50.00
----------------------	-------



Fig. 40A

Owing to the extremely heavy blow of the Boyer Hammers, and the unusually severe punishment it inflicts on the rivet set, the Parker set is used. As will be seen from the cut, the Parker set has a wide tapering shoulder which enables it to better absorb and withstand the effects of the heavy blows of this hammer.

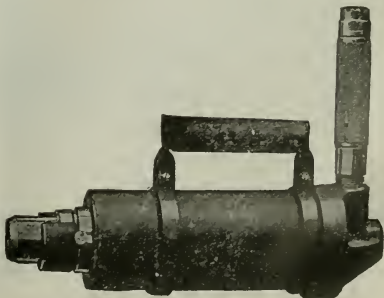
Size, ½ inch.....	list each \$1.00
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Size, ⅝ inch.....	" 1.00
-------------------	--------

Size, ¾ inch.....	" 1.00
-------------------	--------

Size, ⅞ inch.....	" 1.00
-------------------	--------

Size, 1 inch.....	" 1.00
-------------------	--------

Fig. 40
Holder On

FOR FORGES AND RIVETING TOOLS, SEE INDEX

CARPENTERS' OXY-ACETYLENE WELDING AND CUTTING OUTFITS

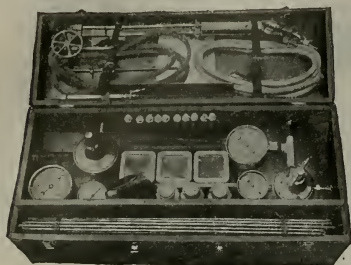


Fig. 71

CARPENTER No. 2 WELDING OUTFIT

Safe—Practical—Economical

This apparatus is designed for use in large Welding Shops, for general repairs in Mills, Factories, Large Foundries, Boiler Shops, Railroad Shops, etc. Its welding capacity is exceptional. The Welding Torch will weld up to 1½ inch thickness of steel, and 4 inch thickness of cast iron.

LIST OF EQUIPMENT

- 1 No. 2 Torch, nicked throughout, with 10 copper tips. Torch is 22 inches long and weighs 30 oz.
- 1 No. 2 Long Arm Oxygen Regulating Pressure Valve, nicked throughout and fitted with a 3,000 lb. safety back, tool steel spring gauge to show the tank pressure, and a 150-lb. line gauge to show the working pressure. Also a needle valve and hose connection outlet from ¼ inch to ¾ inch hose as specified.
- 1 No. 2 Long Arm Acetylene Regulating Pressure Valve, gun metal finish, fitted with a 300-lb. tank pressure gauge and 50-lb. line pressure gauge. Needle valve outlet with ¼ inch to ¾ inch hose connections are supplied as required. (Note:—This valve contains a Silver Bronze Diaphragm as required by the U. S. Bureau of Safety Transportation of Explosives.)
- 10 feet White High-Pressure Hose for Oxygen.
- 10 feet Black High-Pressure Hose for Acetylene.
- 1 large nicked Wrench.
- 1 small nicked Wrench.
- 1 pair Welders' Goggles, large oval lenses of amber olive glass and metal gauze spark protector.
- 1 Carbon Removing Torch.
- 2 Instruction Books.
- 1 Steel Shipping Case.
- 10 lbs. assorted Cast Iron Welding Rod (⅜ to ¾ inch diameter).
- 10 lbs. ½ inch to ¾ inch Low Carbon Steel Welding Rod.
- 5 lbs. ⅝ inch to ¾ inch Norway Iron Welding Rod.
- 3 lbs. Cast Bronze Welding Rod (for brass or bronze).
- 2 lbs. ⅜ inch and ½ inch Cast Aluminum Welding Rods.
- 1 lb. Cast Manganese Bronze Rods (for malleable iron brazing, etc.).
- 1 lb. ⅜ inch and ½ inch Cast Copper Welding Rods.
- 2 lbs. Cast Iron Flux.
- 1 lb. Brass, Bronze and Copper Flux.
- 3 bottles (12 oz.) Aluminum Flux.

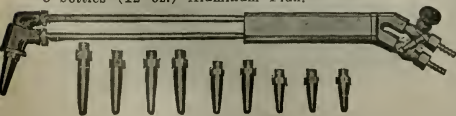


Fig. 72

- No. 2. Torch, with cutting attachment.....\$110.00
 No. 2. Torch, without cutting attachment... 95.00
 Extra Torch with 10 tips..... 28.00

CARPENTER No. 1 OUTFIT

Designed for general repairs in Machine and Blacksmith Shops, Mills, Foundries, Factories, etc.—in fact any job where the average steel weld will not be over ¾ inch thick, and cast iron 1½ inch thick. An excellent all around apparatus where careful and accurate work is required on machines, engine parts, dies, tools, castings, forging, frames, crank cases, transmission cases and gears.

LIST OF EQUIPMENT

- 1 No. 1 Torch, nicked throughout, with 6 copper tips. Torch is 19 inches long, weighs 30 oz., and will be supplied in 90, 30 or 15 degree heads as ordered.
- 1 No. 1 Oxygen Regulating Pressure Valve, nicked throughout, with one 50-lb. nicked line pressure gauge or one 150-lb. gauge if ordered with cutting attachment (see below).
- 1 No. 1 Acetylene Regulating Pressure Valve, gun metal finish, with one 50-lb. black line gauge.
- 10 feet White 150-lb. High-Pressure Hose.
- 10 feet Black 150-lb. High-Pressure Hose.
- 1 9 inch nicked Monkey Wrench.
- 1 7 inch nicked Monkey Wrench.
- 1 set olive green oval Welders' Goggles with gauze face protector.
- 1 Carbon Removing Torch.
- 2 Instruction Books.
- 1 Steel Shipping Case.
- 5 lbs. Hysilicon C. I. Welding Rod.
- 5 lbs. Low Carbon Steel Welding Rod.
- 2 lbs. Norway Iron Welding Rod.
- 1 lb. Cast Bronze Rod (for brass or bronze welding).
- 1 lb. Cast Aluminum Welding Rod.
- 1 stick Aluminum Solder.
- 2 lbs. Cast Iron Flux.
- 1 lb. Brass and Copper Flux.
- 1 bottle Aluminum Flux.



Fig. 73

- No. 1. Torch, with cutting attachment.....\$70.00
 No. 1. Torch, without cutting attachment... 55.00
 Extra Torch with 6 tips..... 21.00

CARPENTER No. 0 OUTFIT

For Auto Repair Shops and Garages, small Foundries, Machine Shops, Die Shops, Shoe Factories, Textile Mills, etc.

LIST OF EQUIPMENT

- 1 Pressure Welding Torch, nickel plated throughout, with 5 tips; will weld from ⅜ inch to ¾ inch thickness of metal.
- 1 Oxygen Pressure Regulator, with 50-lb. line gauge, nickel plated.
- 1 Acetylene Pressure Regulator, with 50-lb. line gauge, gun metal.
- 1 nickel plated Wrench.
- 18 feet High Pressure Welding Hose, with clamps.
- 1 pair Welders' Goggles, olive shade lenses.
- 1 Steel Carrying Case.
- 2 Instruction Books.



Fig. 74

- No. 0. Torch complete\$44.00
 No. 0. Extra Torch with 5 tips..... 18.50

CARPENTER'S CUTTING TOOLS, REGULATING VALVES, SOLDERING AND BRAZING TOOLS AND WELDING SUPPLIES

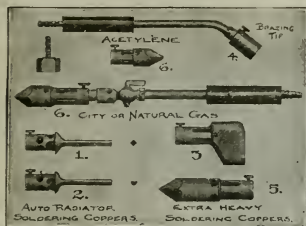


Fig. 83

CARPENTER'S SOLDERING AND BRAZING TOOLS

For all kinds of heavy soldering and brazing.

Outfit "A" complete with acetylene torch with head No. 1 (radiator soldering), head No. 2 (radiator soldering), head No. 3 (soldering of seams), head No. 4 (all kinds of brazing), head No. 5 (extra heavy soldering) and head No. 6 (light general soldering), 6 feet hose, 2 hose clamps. Complete, packed in a box\$11.90

Outfit "B" complete with City or Natural Gas Torch and all heads listed with Outfit "A," packed in a box\$12.90

Outfit "C" (Combination Outfit) complete with both torches and all the heads, packed in a box. Price\$15.80

Acetylene Soldering and Brazing Torch alone (without heads)\$3.00

City Gas Soldering and Brazing Torch alone (without heads)\$5.00

Head No. 1 For radiator soldering 1.00

Head No. 2 For radiator soldering 1.00

Head No. 3 For seam soldering 2.00

Head No. 4 For all kinds of brazing80

Head No. 5 For extra heavy soldering 1.50

Head No. 6 For light general soldering 1.10

CARPENTER'S COMBINATION OUTFIT

This outfit is used for welding, lead burning, soldering and brazing.

The Torch is supplied, unless otherwise specified, with the following 3 tips:

Tip No. 1—Used in connection with oxygen and acetylene gases for welding.

Tip No. 2—Used in connection with oxygen and hydrogen or city gas for lead fusing.

Tip No. 3—Used in connection with city gas and compressed air for soldering and brazing.

If it be desired to use this torch for what we term "country use," i. e., where city gas and compressed air are not easily obtainable, we will supply the torch with three special tips, all for use with oxygen and acetylene gases.

In addition to the torch and three tips, the outfit includes two 8' foot lengths of hose with hose clamps.

Without Wall Attachment\$16.00

Wall Attachment if desired 4.00

Oxygen Regulator with 50 lb. Gauge if desired 11.50



Fig. 81

CARPENTER'S CUTTING TORCH

This torch will cut steel or iron from 1/4 inch to 6 inches thick in any direction. It is valuable where the job to be cut is over 3 inches long.

Cutting Torch, with 3 tips and wheel guide\$40.00

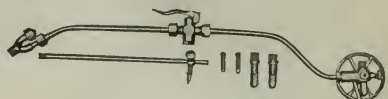


Fig. 82

CARPENTER'S CUTTING ATTACHMENT

Outfits for Nos. 0, 1 or 2 can be supplied with a cutting attachment, which will cut straight or circular cuts from 1/4 inch to 3 inches thick.

Attachment, with 3 tips\$15.00

REGULATING VALVES

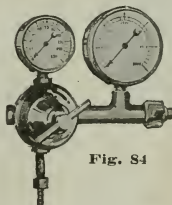


Fig. 84

No. 2 Oxygen, Hydrogen, CO₂, or Air Regulating Pressure Valve with 3,000 lb. steel spring, safety back, pressure tank gauge and 50, 150 or 200 lb. line gauge. Needle shut-off hose connection. Valve and gauges nickel plated.

Oxygen Regulator (long arm style) \$9.70
3,000 lb. Gauge 2.80
50, 150 or 200 lb. Gauge 2.50

List price, complete\$25.00

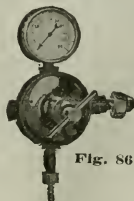


Fig. 86

No. 1. Low Pressure Oxygen, Hydrogen, CO₂, and air regulating valve with 50 lb. line pressure gauge. Valve and gauge nickel plated throughout. Oxygen Regulator, 3 inch diaphragm \$ 9.40
50 lb. Gauge 2.50

List price, complete\$11.90

WELDING SUPPLIES, NON-OXIDIZING

Cast Iron Rod (1/8, 1/4, 3/8, 1/2 inch).....per lb.,	\$0.19
Norway Iron Rod (1/8, 1/4, 3/8, 1/2 inch).....	.28
Carbon Steel Rod (1/8, 1/4, 3/8, 1/2 inch).....	.16
Cast Bronze Rod (1/8, 1/4 inch).....	.86
Cast Manganese Bronze (1/8, 1/4 inch).....	.82
Tobin Bronze Rod (1/8, 1/4 inch).....	.82
Cast Copper Rod (1/8, 1/4 inch).....	1.02
Cast Iron Flux (1/4 or 1 lb. boxes).....	.54
Bronze or Copper Flux.....	.48
Aluminum Flux.....	1.80

All rods in above list are cast 16 to 18 inches, except Norway and Low Carbon Steel.

DIRECT PRESSURE SAND BLAST MACHINE



A simple sturdy sand blasting machine of few parts, available for every kind of sand blasting work, operating at any desired pressure and with any abrasive material. Machines are tested for a 110 pound maximum working pressure, are safe, simple and easy to understand and operate.

A dished head with automatic rocking screen and automatic filling valve, allows for quick filling without the use of pail or funnel.

A coned bottom gives constant feed to the abrasive, eliminates false structural work inside of the blast and dead storage of abrasive. Air and sand feed mechanism in one piece, easily removed for examination or cleaning, eliminating the use of manhole in the tank.

Air valves are quick acting lever type, and packed to prevent leakage of air.

Every machine completely equipped ready for operation, including a Moisture Separator, 15 feet of special Sand Blast hose, 150 nozzles, operator's Hood, Respirator, and armored Gloves.

Standard machines are stocked in the following sizes:

Size	Rated Sand Storage Capacity, Lbs.	Price
1	500	\$400.00
2	1000	600.00
3 Standard Foundry Blast	2000	750.00
4	4000 and up	Special

Special machines of any size, with single or multiple hose for the use of more than one operator. These Blasts have all of the features of our Standard Hose Machines, being equipped with independent controls so that all operators are free to operate without interfering one with the other, thus avoiding the disadvantage of operating more than one hose from a single outlet.

Air consumption is governed by the size of nozzle opening and pressure maintained. Hose, with the best grade thick rubber lining, is of ample size to carry sand volume, with least wear. Every machine irrespective of its size has the same efficiency and may be equipped with any of the

different sized hose and nozzles. The following table gives air-flow and sand discharge through different nozzles at varying pressures:

TABLE OF AIR CONSUMPTION

Nozzle Opening Inch	Hose Internal Diameter Inch	Sand Flow lbs. per Hour	Air Flow in Cu. Ft. Free Air Per Min. Gauge Pressure						
			30	40	50	60	70	80	90
$\frac{3}{16}$	$\frac{3}{4}$	500	23	28	33	38	43	48	53
$\frac{1}{4}$	$\frac{3}{4}$	900	40	49	54	58	76	85	94
$\frac{5}{16}$	1	1300	63	77	91	105	119	134	147
$\frac{3}{8}$	$1\frac{1}{2}$	1700	90	110	130	151	171	191	211
$\frac{1}{2}$	$1\frac{1}{2}$	3000	161	196	232	268	304	340	376

The sand drops from the sand tank through a diaphragm (not an adjustable valve), directly into the carburetor where the air, introduced opposite the opening of the hose picks it up and drives it in a straight line through the hose out of the nozzle.

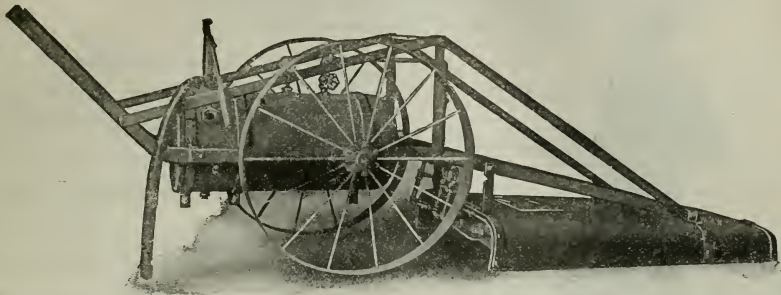
Air at the blasting pressure is admitted to the sand tank above the sand, and also to the inlet of the carburetor, directly below the sand feeding diaphragm, balancing the pressure on both sides of the diaphragm, allowing the abrasive to drop by gravity into the supporting stream of air, causing least wear possible with the handling of abrasive material.

Clogging of the apparatus is prevented by the removal of moisture from the compressed air which passes through the Moisture Separator before entering the machine and the hose line. The screen through which all the abrasive material is passed before entering the sand tank, is mounted on a rocking frame directly above the filling valve. This allows for quick filling without the use of pail or funnel.

In considering the installation of a Sand Blast machine, adapted to your own requirements, write us giving your daily tonnage, a description of the work—if possible sending catalogue, blue prints or illustrations, marked with dimensions and weight. Tell us how many cubic feet of free air per minute and what pressure is available for sand blast use, and we will be glad to advise you what you may reasonably expect from the use of a sand blast machine, based on our experience and actual practice with other plants doing a like character of work.

FOR SAND BLAST NOZZLES SEE INDEX

BUCKEYE SURFACE HEATER AND GROUND THAWER



Hood 48 inches wide, price \$125.00

BUCKEYE PORTABLE METAL MELTING FURNACES

Built in a Number of Designs and Sizes

Type SH as per illustration. Will take in a Melting Pot up to 750 lb. capacity.

Price, including Pot, 450 lb. size \$150.00

Type S, same general design but smaller. Will take in a Pot up to 450 lb. capacity.

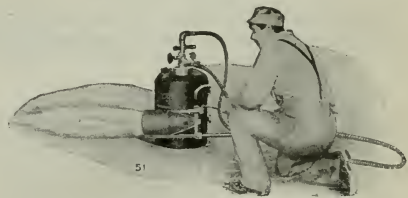
Price \$105.00



THE BUCKEYE HEATER PORTABLE OIL BURNER

Over 5000 in daily use, among Water Works for melting lead from pipe joints; Boiler Shops, Railroads, Shipyards, Boats, Foundries, and for many operations.

Wherever there is compressed air available we advise our Type B.



SIZES, PRICES AND TYPES

Type A, complete outfit with Oil and Air Pump:

Size.....	2A	3A	4A
Price, Outfit with Single Burner.....	\$60.00	\$90.00	\$120.00
Price, Outfit with Double Burner.....	81.00	117.00	153.00

Type B, requires compressed air connections, but the Burner can be stopped and started instantly, best Oil Burner in the market.

Size.....	0B	1B	2B	3B	4B
Price, Outfit with Single Burner.....	\$50.00	\$60.00	\$75.00	\$96.00	\$108.00
Price, Outfit with Double Burner.....	70.00	87.00	105.00	132.00	156.00

COMPRESSED AIR OIL PAINT SPRAYERS AND BURNERS



Fig. 567A

No. 10 SPRAYER

The No. 10 Sprayer only needs air connection by hose and will spray oil paints, varnish and even tar paints.

Size No.	Capacity	Price
1	1 ½ qts.	\$12.00
2	3 qts.	15.00
3	5 qts.	24.00

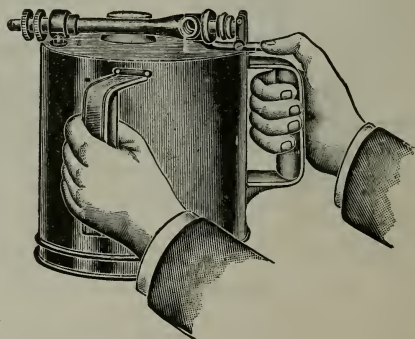


Fig. 567B. No. 10 Sprayer

KEROSENE BLOW TORCH AND PAINT BURNER

The Kerosene Blow Torch and Paint Burner is a recent addition to the large number of similar appliances on the market and is becoming very popular on account of its reliable performance under all conditions.

It will do all the work heretofore undertaken with gasoline torches and it is considered safer.

List price, ½ gallon.....\$15.00

List price, 1 gallon..... 20.00

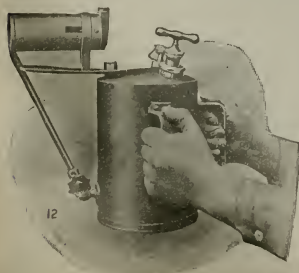


Fig. 567C. Burner

FOR HAND POWER SPRAYERS, SEE INDEX

BRAZING AND MELTING MACHINES. TORCHES

Fig. 101 HOT BLAST TUBULAR TORCH, FOR GASOLINE



Fig. 101

Capacity, 3 quarts
Height over all, 5 ft. 9 in.
Length of flame, 12 inches
Diameter, 2 inches

Size of flame at burner, 2 inches
Net weight, 11 pounds

Shipping weight, 20 pounds
Consumption, 1 quart per hour

For Thawing Railroad Switches. This torch has been adopted by many of the large railroad systems for use in thawing ice in frozen switches, automatic signal mechanisms, etc. It is remarkably efficient for this purpose.

For Destroying Insect Pests. Large use of this torch was made this year in destroying chinch bugs and millions of dollars saved in crops. It is invaluable for this purpose and for destroying insect pests of fruit trees, moths, caterpillars, etc. It is recommended by many state agricultural colleges.

For Burning Weeds. No more efficient device is known for burning weeds. Its use for this purpose is more effective and labor saving than any other means.

Other Uses. Burning paint off large areas, skin drying moulds in foundries, preheating surfaces and many other purposes.

List price each..... \$32.00

Fig. 69 HOT BLAST BRAZING MACHINE

For Kerosene or Gasoline

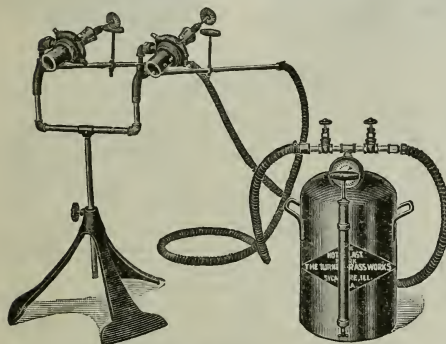


Fig. 69

Two powerful burners are each mounted on swivel connections so flame can be swung up or down and around, concentrated on a single point or held straight ahead. Tripod is adjustable, allowing burners to be raised or lowered. Burners can be lifted off when desired and the flame carried to any part of the work. Work can be left under heat of one burner on the stand while the operator is using the other burner at a distance. When removed from stand the burners are independent of stand parts; it is therefore possible to reach parts that would otherwise be inaccessible.

The tank is of seamless steel with a powerful pressure pump and air gauge. Operator can quickly obtain air pressure required.

Each burner is attached to ten feet of flexible oil tubing, making it possible for two operators to work twenty feet apart at the same time. It is especially useful for automobile repair work, motorcycles, brazing large castings, baking moulds in foundry locomotive and steel car repairing.

Capacity, 8 gallons; height on stand, 30 inches; net weight, 150 pounds; shipping weight, 250 pounds; length of flame, about 18 inches; diameter of flame at burner, 2 inches; consumption, about 3 quarts per hour.

Gasoline Torch for generating burners is supplied with each machine.

Price complete, with Stand, as illustrated...\$137.20
Price without Brazing Stand..... 126.00
Price with one Burner only 110.40
Price with one Burner less Brazing Stand... 100.80

Fig. 47 HOT BLAST UNIVERSAL BRAZING FORGE

No. 47 for Gasoline

No. 47A for Kerosene

This Universal Brazier is fitted with two powerful burners, both mounted on double swing joints, so that the flames can be turned at any angle or separated, any desired distance. When ordering, state if brazer is required for kerosene or gasoline. No. 47A for kerosene includes a gasoline torch for generating the burners. Size of flame at burner, 1½ inches; length of flame, about 10 inches; consumption about 2 quarts per hour.



Fig. 47

Style	Cap. gals.	Height inches	Diam. inches	Net Wt. lbs.	Shpg. Wt. lbs.	Price each
No. 47	8	42	12¾	70	125	\$61.30
No. 47A	8	42	12¾	70	125	69.30



Figs. 82 and 82A

Figs. 82 and 82A
HOT BLAST PIPE JOINT
LEAD MELTING MACHINE

No. 82 for Gasoline

No. 82A for Kerosene

Designed especially for melting lead in pipe joints of water and gas mains, and for taking blisters out of boilers. The generator is large and powerful, producing a perfect blue flame of about 2,800 degrees Fahrenheit. When ordering, state if machine is required for kerosene or gasoline.

A blow torch is furnished with each machine for generating the burner. Six feet of special oil hose accompanies each machine.

Size of flame at burner, 2 inches; length of flame, about 12 inches; consumption, about 3 quarts per hour.

Style	Cap. gals.	Height inches	Diam. inches	Net Wt. lbs.	Shpg. Wt. lbs.	Price each
No. 82	8	27	12¼	90	140	\$89.30
No. 82A	8	27	12¼	90	140	97.30

PLUMBERS' TORCHES

The Non-Leaking Filler Plug used in all Torches shown in this catalog overcomes what has always been a very troublesome feature in using gasoline torches. It is made with a specially prepared lead washer recessed into the brass plug and held securely in place. This plug can be screwed tight with the fingers and will be found superior to any other style. There is no small washer to lose and no leather to be destroyed and rendered unserviceable by the hardening action of the gasoline. The Pump Plunger can be removed easily by unscrewing the pump cap. The leather washer can then be oiled and softened. All Torches made of polished brass.



Fig. 12

*Fig. 12 "OLD RELIABLE" TORCH

This is the dean of gasoline torches, it being the first torch of its kind ever placed on the market. It is probably more extensively used than any other torch made. It is filled from the top.

Capacity.....Full 1 quart	Shipping weight.....5 lbs.
Height over all.....10 in.	Consumption.....
Diameter.....4 in.	.....About ½ pint per hour
Net weight.....3 lbs.	List price.....each \$7.20



Fig. 212

*Fig. 212 HOT BLAST TORCH

This is a medium priced torch, with air valve located at base of pump barrel. Well made, strong, durable and very hot. The tank is of heavy No. 18 gauge brass with brass funnel shaped bottom for filling. The burner is the improved closed generator type designed for either outdoor or inside use. Recommended for all ordinary requirements.

Capacity.....About 1 quart	Shipping weight.....5½ lbs.
Height over all.....9¾ in.	Consumption.....
Diameter.....4 in.	.....About ½ pint per hour
Net weight.....3½ lbs.	List price.....each \$6.80

*Fig. 215 HOT BLAST TORCH

A strictly high grade low priced Torch, with our automatic Spring Valve Pump in the handle, and which we recommended to give the best service obtainable in a torch of this type. The tank is of heavy No. 18 gauge brass with brass funnel shaped bottom for filling, fitted with the Non-Leaking Filler Plug. The Burner is the improved closed generator type designed for either outdoor or inside use. Recommended for all ordinary requirements.

Capacity.....About 1 quart	Shipping weight.....5 lbs.
Height over all.....9¾ in.	Consumption.....
Diameter.....4 in.	.....About ½ pint per hour
Net weight.....3½ lbs.	List price.....each \$6.00

Fig. 93 DOUBLE JET TORCH

This Double Jet Torch has the Burner mounted on a swivel so that it can be turned on either side of tank as



Fig. 215

*Fig. 232 HOT BLAST TORCH

Formerly No. 210

The highest grade Torch of its type. Equipped with Under-Generator Back-Flow Burner of greatest power attainable, it insures the least consumption of gasoline and delivers its maximum heat and efficiency in extreme cold and severest weather conditions.

Capacity.....About 1 quart	Shipping weight.....5½ lbs.
Height over all.....9¾ in.	Consumption.....
Diameter.....4 in.	.....About ½ pint per hour
Net weight.....3½ lbs.	List price.....each \$8.00

Fig. 95 DOUBLE JET TORCH

For Gasoline

This Double Jet Torch has the Burner mounted on a swivel so that it can be turned on either side of tank as shown in cut. The size of flame is one-half inch at Burner.

In construction these Burners differ radically from all others, at the same time they are simple and absolutely positive adjustment is quickly made. The tank is of heavy gauge brass. Recommended for light brazing, annealing light material and where a large volume of intense heat is required.

Capacity.....1 quart	Shipping weight.....5½ lbs.
Height over all.....11¼ in.	Consumption.....
Diameter.....4 in.	.....About 1½ pints per hour
Net weight.....3¾ lbs.	List price.....each \$12.40

*NOTE—Interchangeable Soldering Copper Attachments included with Figs. 12-213-215-232.

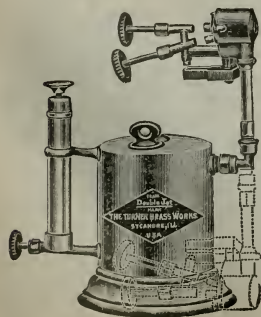


Fig. 93

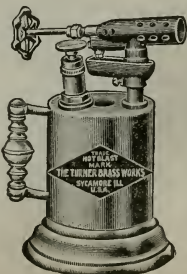


Fig. 232

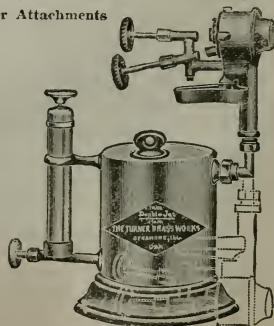


Fig. 95

FURNACES AND TORCHES

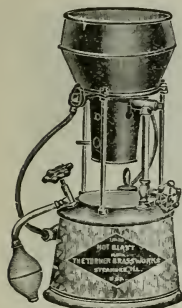


Fig. 53 Bulb

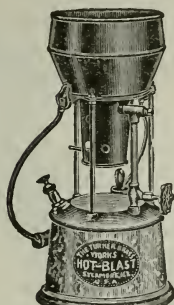


Fig. 63 Pump

No. 53 COIL FURNACES For Gasoline

Heavy Galvanized Iron Tank, with sloping sides. Small fittings made of malleable iron. An efficient, durable furnace of strong construction. Produces a steady, hot flame and is unequalled by any furnace sold at so low a price. Fitted with bulb.

Capacity 7 pints
Height over all 17½ in.
Diameter 8½ in.
Net weight 8¼ lbs.

Shipping weight 15½ lbs.
Galvanized Iron Tank
No. 53. List price, ea. \$6.00
No. 63. List price, ea. 6.80

No. 63 COIL FURNACE

Same as No. 53 except fitted with automatic pump in tank.

Fig. 481 AUTO TORCH For Gasoline

This Torch of the "Auto" type is furnished with our improved closed under generator back flow burner. It gives a very hot blue flame and makes possible the use of this convenient small sized torch for purposes where larger torches are generally found necessary. Attachment to prevent tipping over has approval of all users and mechanics. Suitable for outdoor or inside use. Recommended for repair men, linemen, electricians, plumbers and all exacting requirements.

For holding Soldering Copper we include without extra charge interchangeable steel attachments that can be easily and securely applied.

Capacity 1 pint
Height over all 3½ in.
Diameter 1½ in.
Net weight 2¼ lbs.
Shipping weight 3½ lbs.

Consumption
..... About ¼ pint per hour
Polished Brass
List price each \$8.80

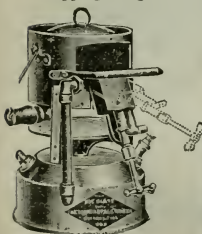


Fig. 36



Fig. 58



"Little Fiend"

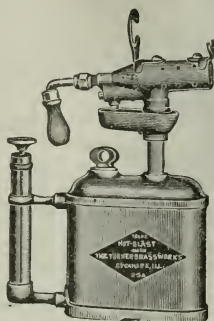


Fig. 481

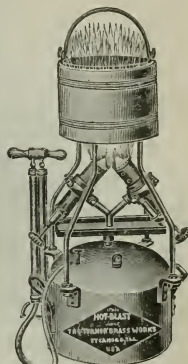


Fig. 91

Fig. 91—91A PORTABLE MELTING FURNACES No. 91 for Gasoline. No. 91A For Kerosene

Constructed for melting large quantities of metal. The two powerful Giant Burners produce a large volume of intense heat, which can be regulated to suit requirements. It has the capacity to melt two hundred pounds of any of the softer metals, as lead, solder, zinc, aluminum, babbitt or tin, in eleven minutes. The shield is large enough to admit a 13½ inch melting pot. In general use by all leading street railway companies, and others. The tank is of pressed seamless steel, galvanized and tested at 150 pounds air pressure. The foot pump, as shown in cut, is used to force air pressure into the tank. When ordering, state if furnace is required for kerosene or gasoline. A melting pot is not furnished unless ordered. No. 91A for kerosene includes a gasoline torch for generating the burners.

Style	Capacity Gals.	Height in.	Diam. in.	Net wt. lbs.	Shpg. Wt., lbs.	Net Price each
91	7¼	36	22	116	165	\$106.70
91a	7¼	36	22	116	165	106.70

Fig. 58 POCKET TORCH

For Alcohol—A small cotton wick draws the alcohol to the flame and by means of the small adjustable blow pipe and rubber tube on the side the operator can blow a very fine pointed flame, producing an intense heat, suitable for small soldering and other work. It is only 1½ by 4¼ inches and light and convenient to carry in the pocket or tool bag. A tight-fitting metal cap prevents evaporation. Simple, durable and always ready for use. Adapted for use of electricians, linemen, telephone and telegraph contractors, laboratory and office work.

Nickel Plated Brass
Capacity ¾ pint
Height over all 6½ in.
Diameter 1½ in.
Net weight 10 oz.

Shipping weight 1 lb.
Consumption
..... About ½ pint per hour
List price \$3.75

Fig. 36—39 HOT BLAST FURNACES For Gasoline

The tank is made of heavy galvanized iron reinforced and strengthened at every joint. The burner is attached to a swivel joint and gives a flat flame of intense heat with positively the minimum consumption of gasoline. The top section is large enough to heat a pair of eight pound soldering coppers and melt a five inch pot of metal at the same time. The non-leaking filler plug is furnished with this furnace. Top section can be removed and tank and burner used as a torch. Recommended for tinners, iron and copper workers, plumbers and electricians.

Galvanized Iron Tank
Capacity 5 pints
Height over all 12½ in.
Diameter 8½ in.
Net weight 9 lbs.
Shipping weight 14 lbs.

Consumption
..... About ¼ pint per hour
No. 36. List price, ea. \$10.40
Polished Brass Tank
No. 39. List price, ea. \$16.00

"LITTLE FIEND" ATTACHMENT FOR BLOW TORCH

Heats a pair 4 lb. soldering coppers in five minutes. Can be attached to any standard make of single burner quart blow torch. Made of heavy sheet steel with bronze clamp collar.

List price \$1.50

LEAD MELTING FURNACES

These furnaces are made of 3/16 inch boiler plate for the body and are reinforced at both top and bottom with a very heavy cast iron ring. The wheels are attached to a wrought iron hub, held in position by a heavy casting which forms part of the hub and same is riveted through the body and through a protection plate placed on the inside of the body. This makes the distance between the wheels of a width so that the furnace cannot tip over, and also makes the furnace practically indestructible.



Fig. 615A. ON WHEELS No. 1

21½ inches diameter, 24 inches high.
Pot 16½ inches diameter, 11 inches deep.
Capacity 700 lbs. lead.
Price complete\$70.00

Fig. 615A. ON WHEELS No. 2

16 inches diameter, 24 inches high.
Pot 11½ inches diameter, 8 inches deep.
Capacity 260 lbs. lead.
Price complete\$63.00

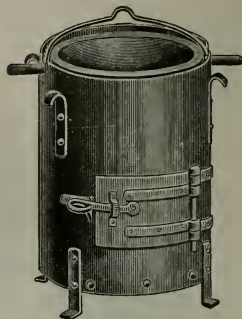


Fig. 6150

Fig. 615B. WITH DOOR AND POT RACK—ON WHEELS No. 1—Not illustrated

21½ inches diameter, 24 inches high. Pot 16½ inches diameter, 11 inches deep. Capacity 700 lbs. lead.
Price complete\$74.00

Fig. 615B. WITH DOOR AND POT RACK—ON WHEELS No. 2—Not illustrated

16 inches diameter, 24 inches high. Pot 11½ inches diameter, 8 inches deep. Capacity 260 lbs. lead.
Price complete\$67.00

Fig. 615C. WITHOUT DOOR—ON LEGS No. 1

21½ inches diameter, 24 inches high. Pot 15½ inches diameter, 10½ inches deep. Capacity 600 lbs. lead.
Price complete\$49.00

Fig. 615C. WITHOUT DOOR—ON LEGS No. 2

16 inches diameter, 24 inches high. Pot 11½ inches diameter, 8 inches deep. Capacity 260 lbs. lead.
Price complete\$42.00

WITH DOOR AND SMOKE STACK—ON LEGS

Fig. 615D. No. 1—Not illustrated

21½ inches diameter, 24 inches high. Pot 15½ inches diameter, 10½ inches deep. Capacity 600 lbs. lead.
Price complete\$52.00

Fig. 615D. No. 2—Not illustrated

16 inches diameter, 24 inches high. Pot 11½ inches diameter, 8 inches deep. Capacity 260 lbs. lead.
Price complete\$45.00

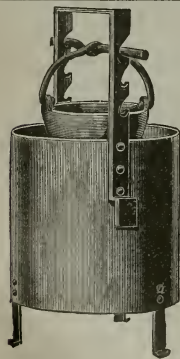


Fig. 615E

These furnaces are made of 3/16 inch boiler plate for the body. The notched pot rack is made of heavy material and gives strength to the furnace. The pots are made of heavy cast iron fitted with a bail. These furnaces are well put together and are constructed to stand hard usage and very rough handling.

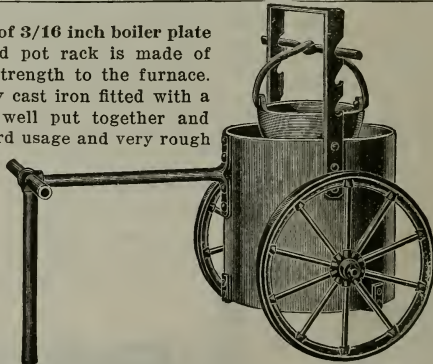


Fig. 615F

Fig. 615E. WITHOUT DOOR—ON LEGS No. 1

18 inches diameter, 24 inches high. Pot 13½ inches diameter, 7½ inches deep. Capacity 200 lbs. lead.
Price complete\$42.00

Fig. 615E. WITHOUT DOOR—ON LEGS No. 2

24 inches diameter, 24 inches high. Pot 15 inches diameter, 11 inches deep. Capacity 450 lbs. lead.
Price complete\$49.00

Fig. 615F. WITHOUT DOOR—ON WHEELS No. 1

18 inches diameter, 24 inches high. Pot 13½ inches diameter, 7½ inches deep. Capacity 200 lbs. lead.
Price complete\$60.00

Fig. 615F. WITHOUT DOOR—ON WHEELS No. 2

24 inches diameter, 24 inches high. Pot 15 inches diameter, 11 inches deep. Capacity 450 lbs. lead.
Price complete\$67.00

PIG LEAD—SHEET LEAD

We carry a very large stock of Pig and Sheet Lead and are always able to furnish immediately any quantity wanted. Lowest market prices on one pig or a carload, upon request.

PLUMBERS' AND TINSMITHS' TOOLS

"TORRID" FURNACES

Especially constructed for Sheet Metal Workers' Use

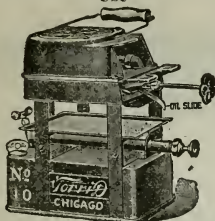


Fig. 402A

Tanks are drawn of No. 18 gauge steel, tinned and rectangular in shape, avoiding danger of upsetting on roof-work, etc., tested at 30 lbs. air pressure. Has a brass air pump with a simple and accessible valve, cast metal hood with circular openings, for melting pot, with register cover. Is noiseless, odorless and smokeless in operation, convenient, durable and economical, using 25 to 40 per cent less fuel than any other furnace offered for like use now on the market. Has greatest range in heating, namely, 3 to 12 lb. coppers, indoors or on a roof, in cold and windy weather.

Capacity of tank.....1 gallon
Consumption of oil per hour, full blast.... $\frac{3}{4}$ pint
Height.....12 inches
Weight.....14 lbs.
Price each.....\$14.00

MELTING LADLES

Drop forged, of extra heavy mild steel

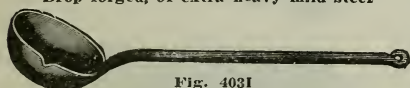


Fig. 403I

Size.....inches	2½	3	3½	4	5
Capacity.....lbs.	1	1½	2	3	4
Per doz.....	\$2.75	3.50	4.25	5.00	6.50

Size.....inches	6	7	8	9	10	12
Capacity.....lbs.	15	26	45	57	80	130
Extra Heavy.....each	\$1.50	1.75	2.25	3.00	3.50	4.25

Fig. 402E POURING POTS

Outside diameter, 8 inches;
inside diameter, 7 inches;
depth, 6 inches.
Price each.....\$2.50



Fig. 402E. Pouring



Fig. 403H. Melting

Fig. 403H MELTING POTS

Diameter on top, in.....	5	6	8	10½	13½
Capacity, lbs.....	10	15	35	70	160
Each.....	\$0.50	.70	1.00	2.75	5.25

PLUMBERS' FORCE CUPS



Fig. 403J

Made of tough and springy rubber. Are invaluable for cleaning out closets, bowls, sinks, etc. Length 4 feet, weight less than 2 lbs.

Made with valve in cup or handle.
Per doz.....\$8.00

FOR OAKUM AND CALKING TOOLS, SEE INDEX

GAS FURNACES

Double Burner Gas Furnace
For Natural or Artificial Gas



Fig. 402B

The Improved Double Burner Gas Furnace for heating soldering coppers for plumbers' or tinnerns' use has a sheet-iron top and is brick-lined, and arranged to receive two coppers. The Burner used gives an intense heat, makes no smoke and economizes time. It will prove a very desirable furnace in every shop, as an air blower is not required when heating coppers.

Double Burner Gas Furnace.....each \$4.00

SOLDERING COPPERS

Drawn Copper Bolts, Forged
With Square Points for Common Use



Fig. 403F

Made of drawn copper bolts of the best quality, and are shaped under a hammer. By this method they are as solid as the metal can be made. They should not be compared with such as are cast from copper ingots.

The price quoted is a base price including all coppers weighing 3 lbs. per pair or more. Coppers of less weight take an additional net price as named below.

Nos.....	1	1½	2	2½	3	4	5	6	7	8	10	12	14
Wt. lbs., per pair	1	1½	2	2½	3	4	5	6	7	8	10	12	14
Soldering Coppers, weighing 3 lbs., per pair or more. Base price, net.....	\$0.45												
Soldering Coppers, weighing 2½ lbs., per pair, extra, net.....	.01												
Soldering Coppers, weighing 2 lbs., per pair, extra, net.....	.02												
Soldering Coppers, weighing 1½ lbs., per pair, extra, net.....	.03												
Soldering Coppers, weighing 1 lbs., per pair extra, net.....	.06												

LEAD AND TIN

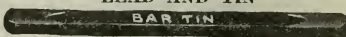


Fig. 402C

Bar Tin.....	per lb. \$.....
Sheet Lead.....	".....
Fig Lead.....	".....
Bar Lead.....	".....
Fig Tin.....	".....

Lowest market price on application.

SOLDER

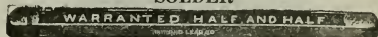


Fig. 403G

Half and half, per lb. \$.....	
Refined metal.....	

Lowest market price on application.

WIRE SOLDER



Fig. 402D

Half and half in spools—lowest market price on application.

SPRING STEEL SEWER ROD

Warranted spring steel. Uncolls and coils like a clock spring.

Length, feet.....	25	50	75	100
Width, inches.....	1¼	1½	1¾	2
Approx. weight, lbs.....	15	30	50	65
Each.....	\$2.50	5.00	7.50	10.00

BABBITT METAL, SCRAPING AND PACKING TOOLS

A large stock of Babbitt metals for every kind of service always on hand for immediate shipment, at lowest market prices.

Magnolia Metal



Fig. 403A

In 56 lb. boxes.....per lb., \$....
Lowest Price on Application.

G. B. C. & CO. SPECIAL METAL

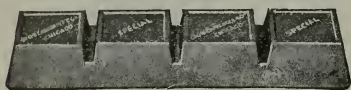


Fig. 403B

In 50 lb. boxes.....per lb., \$....
Lowest Price on Application.

BABBITT METAL



Fig. 403C

Genuine Babbittper lb., \$...
Extra
No. 1.
No. 2.
No. 3.
No. 4.
Hoyt's Genuine
Lowest Price on Application.

MONARCH BALL METAL



Fig. 403D

In 56 lb. boxes.....per lb., \$...
Lowest Price on Application.

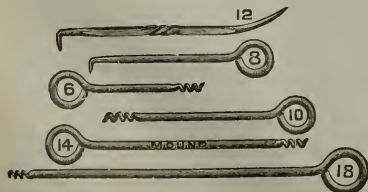


Fig. 505A

FOR ENGINE ROOM SUPPLIES OF EVERY DESCRIPTION, SEE INDEX

LEAD JOINT RUNNERS

Made of pure asbestos. Hot metal has no effect on them. Ferrules on ends to protect them. Flexible, enabling them to be fitted close to pipes for a snug fit.

No. 1. Improved $\frac{3}{4}$ inch square for 2, 3 and 4 inch pipe.....each \$1.65
No. 2. Improved $\frac{3}{4}$ inch square for 4, 5 and 6 inch pipe.....each 2.00

No. 3. Improved 1 inch square for 6, 8 and 10 inch pipe.
Each\$3.00

No. 4. Improved 1 inch square for 10, 12 and 14 inch pipe.
Each.....\$4.00

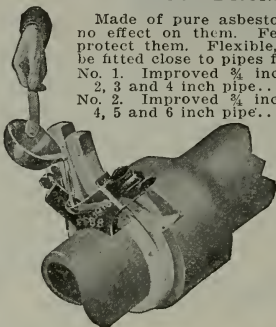


Fig. 458

MOUND IMPROVED SCRAPING TOOLS

For Scraping Valves, Babbitt Metal, Journals, Bearings, etc.

There are six Scrapers, as shown in the cut, in each set. They vary in size from 8 to 14 inches.

The scrapers are made of the best tool steel, carefully forged, tempered and polished.

No. 1. Set of 6 Scraping Tools, in oak case\$2.50

No. 2. Set of 6 Mound "Special" Hollow Ground Scraping Tools in oak case.... 3.50

PACKING TOOLS

Will go into any valve rod pump or engine stuffing box.

Can be bent to meet any requirements. Nickel plated. The small sizes in above set are made from $\frac{1}{8}$ inch, the medium from $\frac{1}{4}$ inch and the large size from $\frac{3}{8}$ inch steel.

No. 1. Set of 4 packing tools, Nos. 6, 10, 12, 14...\$1.50
No. 6. Set of 6 packing tools, Nos. 6, 8, 10, 12, 14, 18..... 2.25

Special Large Packing Tools

Made of $\frac{3}{8}$ steel, heavy screw point.

20 inches long, nickel plated.....\$1.00
24 inches long, nickel plated..... 1.25

PLUMBERS' TOOLS

Hammer forged of high-grade octagon crucible steel. Properly shaped and tempered.

REGULAR CAULKING CHISELS



Fig. 5470

Out-end, In-end.	Per doz
In-end, $\frac{5}{8}$ in. octagon steel. Ends $\frac{1}{8}$ to $\frac{1}{4}$ in. thick, width $\frac{3}{4}$ to 1 in.	\$4.00
Out-end, $\frac{5}{8}$ in. octagon steel. Ends $\frac{1}{8}$ to $\frac{1}{4}$ in. thick, width $\frac{3}{4}$ to 1 in.	4.00

YARNING CHISELS



Fig. 5471

$\frac{1}{2}$ in. octagon steel. 6 in. blade.	per doz.	\$5.00
$\frac{1}{2}$ " " " 8 " " " " " " " " " " " "	"	6.00
$\frac{5}{8}$ " " " 10 " " " " " " " " " " " "	"	7.00
$\frac{5}{8}$ " " " 12 " " " " " " " " " " " "	"	8.00

SPRING PACKING CHISELS



Fig. 5472

$\frac{1}{2}$ in. octagon steel. 6 in. blade.	per doz.	\$5.00
$\frac{1}{2}$ " " " 8 " " " " " " " " " " " "	"	6.00
$\frac{5}{8}$ " " " 10 " " " " " " " " " " " "	"	7.00
$\frac{5}{8}$ " " " 12 " " " " " " " " " " " "	"	8.00

GASKET CHISEL



Fig. 5473

Short Gasket

$\frac{5}{8}$ in. oct. steel. Length of face 1 in. Width $\frac{3}{4}$ in. Thickness $\frac{1}{8}$ in.	per doz.	\$4.00
$\frac{3}{4}$ in. oct. steel. Length of face 1 in. Width $\frac{7}{8}$ in. Thickness $\frac{1}{4}$ in.	per doz.	6.00
$\frac{7}{8}$ in. oct. steel. Length of face 1 in. Width 1 in. Thickness $\frac{3}{8}$ in.	per doz.	8.00
1 in. oct. steel. Length of face 1 in. Width 1 in. Thickness $\frac{1}{2}$ in.	per doz.	10.00

Long Gasket

$\frac{5}{8}$ in. oct. steel. Length of face 3 in. Width $\frac{3}{4}$ in. Thickness $\frac{1}{8}$ in.	per doz.	\$5.00
$\frac{3}{4}$ in. oct. steel. Length of face 3 in. Width $\frac{7}{8}$ in. Thickness $\frac{1}{4}$ in.	per doz.	7.00
$\frac{7}{8}$ in. oct. steel. Length of face 3 in. Width 1 in. Thickness $\frac{3}{8}$ in.	per doz.	9.00
1 in. oct. steel. Length of face 3 in. Width 1 in. Thickness $\frac{1}{2}$ in.	per doz.	11.00

BENDING IRON



Fig. 5474

Heavy pattern. $\frac{5}{8}$ inch round steel. 12 in. long.	per doz.	\$5.00
Light pattern. $\frac{1}{2}$ inch round steel. 11 in. long.	per doz.	4.05

EXTRA SHORT GASKET CHISEL



Fig. 5475

$\frac{1}{2}$ inch octagon steel.	per doz.	\$3.70
$\frac{5}{8}$ " " " " " " " " " " " "	"	4.00

STUB END CAULKING CHISEL



Fig. 5476

$\frac{5}{8}$ inch octagon steel.	per doz.,	\$4.00
$\frac{3}{4}$ " " " " " " " " " " " "	"	6.00

GASKET CHISEL—EXTRA OFFSET

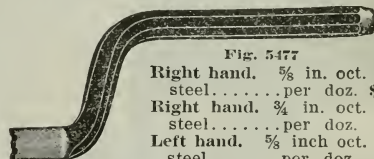


Fig. 5477

Right hand. $\frac{5}{8}$ in. oct. steel.	per doz.	\$6.00
Right hand. $\frac{3}{4}$ in. oct. steel.	per doz.	8.00
Left hand. $\frac{5}{8}$ inch oct. steel.	per doz.	6.00
Left hand. $\frac{3}{4}$ inch octagon steel. " " " "	"	8.00

SINGLE RIGHT AND LEFT CAULKING CHISEL—EXTRA OFFSET

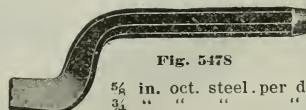


Fig. 5478

$\frac{5}{8}$ in. oct. steel.	per doz.	\$5.00
$\frac{3}{4}$ " " " " " " " " " " " "	"	7.00

COMBINATION RIGHT AND LEFT TOOL



Fig. 5479

With this tool one can get in any corner where neither the straight nor the upright caulking tool can be used. Forged of $\frac{3}{4}$ inch square high grade tool steel. Length 15 in. Weight $2\frac{1}{4}$ lbs. per doz. \$24.00

PIPE BENDING SPRINGS

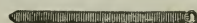


Fig. 5480

Size, inches.	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Per doz.	\$7.50	\$9.50	\$12.00	\$14.00

TINSMITHS' AND WELDING SUPPLIES

DROP FORGED STEEL "STANDARD"
REGULAR TINNERS' SNIPSDROP FORGED STEEL "STANDARD"
CIRCULAR BLADE TINNERS' SNIPSSee Index
for
Bench
ShearsFig. 46SA
Bar tool steel laid blades. Japanned or blue
finish handles.Fig. 46SB
Bar tool steel laid blades. Japanned or blue
finish handles.

No.	Full Length inches	Length of Cut, inches	Price per pair
6½	15½	4½	\$3.00
7	14	4	2.50
8	13	3½	2.00
9	12	3	1.50
10	11	2½	1.40
11	9	2¼	1.20
12	8	2	1.05

No.	Full Length inches	Length of Cut, inches	Price per pair
6½ CB	15½	4½	\$4.25
7CB	14	4	3.50
8CB	13	3½	3.00
9CB	12	3	2.50
10CB	11	2½	2.25
11CB	9	2¼	1.95
12CB	8	2	1.80

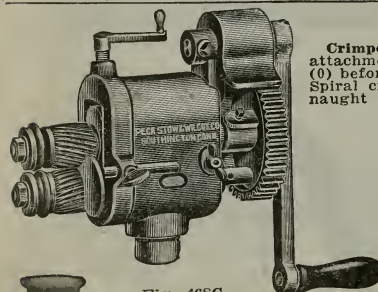


Fig. 46SC

CRIMPING AND BEADING MACHINES
Capacity No. 20 Gauge Iron and Lighter

Crimpers Nos. 9A, 99A, 19A and 019A are furnished with foot treadle attachment in place of crank screw for depressing rolls. A naught (0) before number indicates that straight crimping rolls are furnished. Spiral crimping rolls are fitted on machines in all numbers where naught (0) is omitted.

Number	Shipping Weight lbs.	Diameter Beading Rolls, ins.	Diameter Crimping Rolls, ins.	Width Crimp Rolls, ins.	Width Bead Rolls ins.	Size of Bead Ogce ins.	Ratio Gearing	Dist. be- tween shaft venters, ins.	Price com- plete with standard
7A	65	1	1	1½	1	1	3:1	1½	\$12.00
07A	65	1	1	1½	1	1	3:1	1½	12.00
9A	85	1	1	1½	1	1	3:1	1½	14.00
09A	85	1	1	1½	1	1	3:1	1½	14.00
17A	63	...	1	1½	...	...	3:1	1½	12.00
017A	63	...	1	1½	...	...	3:1	1½	12.00
19A	83	...	1	1½	...	...	3:1	1½	14.00
019A	83	...	1	1½	...	...	3:1	1½	14.00

Shipped usually boxed.



Fig. 46SD

BRAZING, WELDING AND SOLDERING COMPOUNDS
SOLDERING SALTS

A Liquid Flux

	Each
½ lb. bottles..	\$0.30
1 lb. bottles..	.40
5 lb. bottles..	2.00



Fig. 46SE

Each\$0.20

SOLDERING PASTE



Fig. 46SF

2 oz. tins.....	each \$0.17
½ lb. tins.....	" .51
1 lb. tins.....	" .84
5 lb. tins.....	" 3.90



BRAZING FLUX

"Anti-Borax Brazing" Flux is the strongest and most efficient brazing flux on the market.

On account of its great strength, one fourth the quantity ordinarily used of other fluxes, is ample to do the work.

Price per pound.....\$0.10



Is applied same as borax, but as it does not boil up while fluxing it is much more economical and convenient to use.

It will make welds at 250 degrees lower heat than Borax, leaving absolutely no scale; it does not pit the steel like borax or borax compounds do. It is especially adapted to work that is fastened together or any welding where a flux is needed on the outside, as in split welds or in finishing second heats or on toe-calks, etc., etc.

Price per pound.....\$0.12

BORAX

Refined and Powdered

Full barrels	per lb. \$0.50
Broken lots	per lb. .10



WELDING COMPOUND

"E-Z" sticks to the metal at a low heat and is equally good for lap, split, "V," butt or jump welding. It will weld tool, plow, open hearth, Bessemer or spring steel, making a stronger and smoother weld, at fully 250 degrees lower heat than any other compound.

Price per pound.....\$0.08

CALDRONS KETTLES AND GLUE HEATERS



Fig. 615A

CALDRON
KETTLES

Made of the
best pig iron.
Guaranteed
full measure
and perfect.

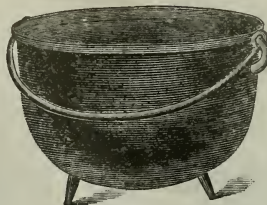


Fig. 615B

SUGAR OR
WASH
KETTLES

Made of the
best pig iron.
Guaranteed full
measure and per-
fect.

Actual Measure gallons	Diam. Outside of Flange inches	Diam. Inside of Flange inches	Depth Inside inches	Each
25	28	24	16	\$ 6.00
33	31	28	16	8.00
41	34	30	19	10.00
48	35	31	19	12.00
53	36	32	20	13.00
65	39	34	20½	14.00
75	41	36	22	18.00
90	43	38	22	25.00
110	46	42	23	30.00
170	61	54	24	50.00
230	62½	58	31	70.00
500	80	72	40	150.00

No.	Actual Measure gallons	Inside Dimensions		Usual Rating gallons	Each
		Diam. inches	Diam. inches		
1	8	16	11	10	\$ 2.20
2	10½	18	12	13	2.80
3	15	20¼	13½	18	3.50
4	18¼	22	13¾	20	4.50
5	21½	23	14¾	25	5.00
6	25½	25	15½	30	6.00
7	29½	26	16	32	7.00
8	39	29	18	40	10.50

IMPROVED STEAM GLUE HEATERS

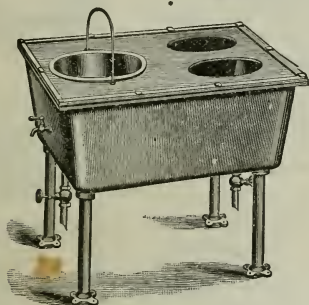


Fig. 474

Single Heaters, are intended for use on bench where each man has his private supply of glue, or they can be arranged with stand, as shown in Fig. 474, when desired. They can be connected either through opposite sides for feed and waste pipes, or both pipes may enter from below by removing the plugs from bottom outlets, and closing outlets in sides. When desired, any number of these Single Pot Heaters can be connected together in a continuous row, or in a system of two or more rows connected with pipes.

PRICE LIST, WITHOUT POTS

Valves shown in cuts are not included in prices, but are illustrated to show method of connecting heaters.

All sizes with stand or feet are made of same height, viz.: 30 in.
Size 00—Takes single pot. Either 5-inch or 6-inch..... \$5.50
Extra for Stand, 40 cts.

Size 0—Takes single pot. Either 8-inch or 10-inch..... 8.50
Extra for Stand, 60 cts.

Size A—14 inches x 14 inches x 13 inches deep..... 10.00
No. 1 takes 2 5-in. pots. No. 2 takes 1 5-in. and 1 6-in. pot.
No. 3 takes 1 8-in. pot. No. 4 takes 1 10-in. pot.

Size B—20 inches x 14 inches x 10 inches deep..... 15.00
No. 1 takes three 5-in. pots. No. 2 takes one 8-in. and one 6-in. pot.
No. 3 takes three 6-in. pots. No. 4 takes one 8-in. and one 5-in. pot.

Size C—24 inches x 20 inches x 12 inches deep..... 20.00
No. 1 takes six 5-in. pots. No. 2 takes one 10-in. and three 5-in. pots.
No. 2 takes six 6-in. pots. No. 5 takes one 10-in. and one 8-in. pot.
No. 3 takes one 10-in. and three 6-in. pots. No. 6 takes one 8-in. and four 5-in. pots.

PRICE LIST OF POTS

		5-in.	6-in.	8-in.	10-in.
Copper	Each	\$1.00	\$1.50	\$2.25	\$3.00
Plain Iron	Each	.60	.80	1.30	1.75
Enamelled	Each	.80	1.20	1.75	2.75

Hand Glue
Heaters are
listed on
page 845.

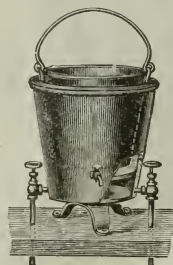


Fig. 473

FARM BOILERS AND KETTLES

FARM BOILERS

A Farm Boiler with a long needed improvement. The caldron of this boiler can be dumped, and the contents emptied in a minute, saving the time usually given to the slow and tedious method of dipping.

The boiler is strongly built of the best grade of cast iron. The kettle has an extra thick bottom and is cast very smooth. Will burn either wood or coal. Price of both styles the same. Please state which kind is wanted when ordering.

No.	Capacity gals.	Price each	Wt. lbs.	Extra for Enameling
1	25	\$23.00	275	\$10.00
2	43	34.00	450	11.00
3	53	38.00	480	11.50
4	75	46.00	500	12.00

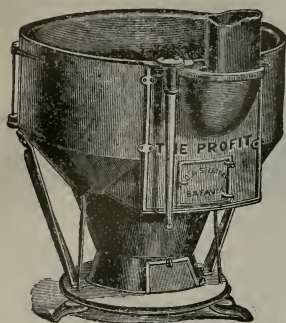


Fig. 1401



STEEL BOILERS

We offer in the line of plain Steel Boilers a higher quality boiler than can usually be found at a price such as we ask. The jacket, or outside shell, is made of heavy sheet steel. The edges are banded for reinforcement, and the jacket has no bottom, permitting its use outdoors on the bare earth. If preferred, the bottom may be filled with earth or bricks, as illustrated. Furnished with double doors so it can be used for coal, if fitted with coal fixtures.



Fig. 1402

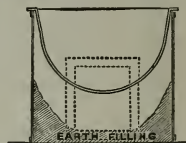


Fig. 1402A

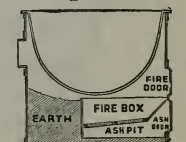


Fig. 1402B

No.	Capacity gallons	Weight lbs.	Price each	No.	Capacity gallons	Weight lbs.	Price each
1	25	165	\$12.00	6	53	260	\$19.50
2	33	190	14.00	7	65	335	22.00
3	40	225	15.00	8	75	375	26.00
4	48	240	16.50	9	90	470	32.00
5	53	255	18.00	10	110	500	36.00

STEAM JACKETED KETTLES

Made of very thick metal, and are packed with asbestos sheet packing. Have ample steam space, and are tapped for inlet and drip pipes. Unless specially ordered, we will furnish tanks tested to 75 pounds (hydraulic) pressure to the square inch.

The inner and outer bowls are cast separately, permitting renewal or replacing of inner bowl if used for acids or corrosive substances. Special fittings and attachments can be furnished to order. Kettles can be fitted with any size outlet pipe.

Plain Kettle without Curb

Capacity gallons	Diameter and Depth	Weight	Price each
5	14x10	255	\$20.00
10	18x12	410	28.00
15	21x14	525	32.00
20	22x15	550	40.00
30	28x16	750	55.00
40	29x19	1700	65.00
60	33x20	1650	85.00
90	38x22	2100	110.00

With Curb

Capacity gallons	Diameter and Depth	Weight	Price each
34	24x21	1000	\$60.00
54	29x22	1150	75.00
114	38x27	2400	125.00



Fig. 1403A



Fig. 1403B

TAR AND ASPHALT HEATERS—SAND AND GRAVEL DRYERS

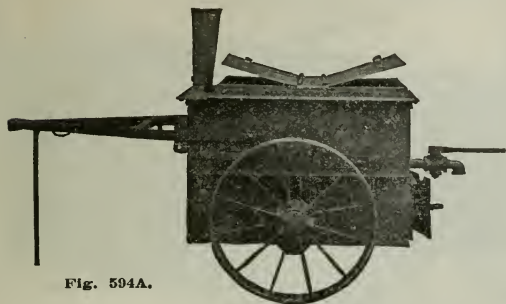


Fig. 594A.

	25 gallon capacity	60 gallon capacity	100 gallon capacity
Height	38 inches	38 inches	38 inches
Width	30 inches	30 inches	30 inches
Length	32 inches	40 inches	57 inches
Weight	450 lbs.	525 lbs.	600 lbs.
Each	\$150.00	\$168.00	\$192.00

STYLE "O"

Constructed for small highway and roofing jobs. Something easy to handle and quick to heat. Has adjustable handle with stiff leg. Allows kettle to raise or lower any level. Inside tank welded, guaranteed not to leak. 25 gallon, one lid; 60 and 100 gallon, two lids. Outside shell properly stiffened by heavy angle iron. Axle strongly braced in angle iron, also acts as stiffener to kettle.

All sizes have 30 inch wheels, 4x½ inch tire. Constructed of No. 12 fire box steel throughout.

ASPHALT POT

An outfit used by highway division superintendents for small patching jobs. Inside pot lifts out and can be used as pouring pot.

Has cast iron grate for burning coal; 14 inch diameter wheels; outside shell, ⅝ inch; inside tank, No. 16 steel; capacity, 10 gallons. Note the Pot sets firmly in outside shell.

Price, each.....\$115.00

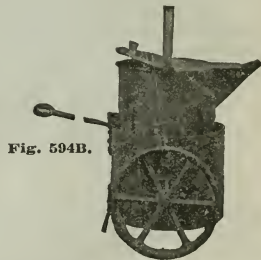


Fig. 594B.

COMBINATION GRAVEL, SAND, TAR OR ASPHALT HEATER

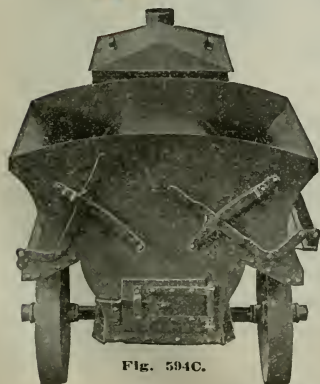


Fig. 594C.

This Combination Heater and Dryer is especially adapted for street repair work, roofers and municipalities. The fire cylinder is made of ¼ inch boiler steel, insuring maximum heating surface, preventing warping and clogging. Note adjustable levers in the rear which operate and regulate side doors, allowing any quantity of dried sand or gravel to pass. Either side can be operated separately.

The Heater has semi-spherical bottom and rests in cylinder as shown, thereby insuring maximum heating surface and strength. Made of No. 10 boiler steel. All seams welded, non-leakable.

Has one furnace—separate yet combined.

Fifth wheel has proper construction for easy riding over rough roads. Economical, strong and durable.

Size of Dryer: Length, 3 feet 6 inches; width, 4 feet; capacity, 17 cubic feet. Size of tank: Length, 3 feet; width, 2 feet 3 inches; capacity, 100 gallons. Weight, 1,800 lbs.

Front wheel, 18 inch diameter, 4x¾ tire, 2 inch square axle. Rear wheel, 24 inch diameter, 4x¾ tire, 2 inch square axle.

Price, each.....\$440.00

FOR SHOVELS, HOES AND SAND SCREEN, SEE INDEX

ASPHALT, TAR AND PITCH KETTLES

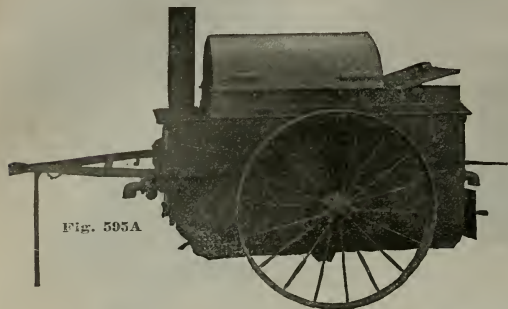


Fig. 595A

STYLE "N"

Specially constructed for highway work. Has all the advantage required, namely, quick heating. Note heating space all around inside tank. Two 2 inch draw valves either end. Large fire and cleanout door, both strongly reinforced with angle iron. Burns any size wood. Adjustable handle can be raised or lowered. Axle strongly braced by angle iron which acts as support to outside shell.

Has barrel heating top easy to handle; also dipping top which makes entrance to inside of kettle very accessible as well as very convenient for adding to dipping material; removed by four bolts. Inside tank welded throughout, removed by six bolts.

Constructed for contractors who appreciate service, economy and durability. Most complete heater of its kind.

Wheels, 44 inch diameter, 4x $\frac{1}{2}$ inch tire. Axle, 2 inches square. Capacity, 150 gallons. Length, 66 inches Width, 37 inches. Height, 48 inches. Weight, 1,150 lbs.
List price each.....\$260.00

STYLE "L"

This Kettle is specially constructed for the contractor who has to work on asphalt streets where they require protection. Can be used for heating any substance and is equipped with or without 1 $\frac{1}{2}$ inch draw cock.

1 $\frac{1}{2}$ barrels, capacity. Size, 28x34. Weight, 225 lbs. Made of No. 12 fire box steel. Made to stand 6 or 8 inches above street as required.

List price each.....\$86.00



Fig. 595B



Fig. 595C

STYLE "G"

Specially adapted for contractors who have small patching jobs and do not care to heat a larger body of material than required. Constructed with welded guaranteed non-leakable inside tank. Will heat the thickest substance with same results. No leaks. Inside tank lifts out easily. Has two handles. Can be used on roof if so desired. Has closed fire bottom and door.

Capacity, $\frac{1}{2}$ barrel. Size, 21x26. Weight, 80 lbs. Construction of No. 14 fire box steel.

List price each.....\$40.00

FOR TAR, PITCH, OAKUM, ETC., SEE INDEX

ASPHALT, TAR AND PITCH KETTLES

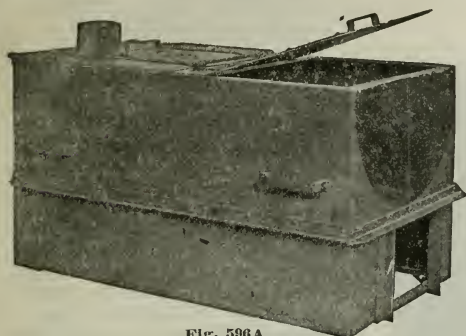


Fig. 596A

STYLE "E" NON-LEAKABLE KETTLE

Made in three sizes. Constructed to take care of any roof. Also used by large plants for their upkeep. Has a guaranteed non-leakable inside tank, easily removed. Shell welded on all seams and supported by angle iron. Has four handles. The 100 and 60 gallons have two lids, the 25 gallon, one. Made of No. 12 steel throughout.

Capacity	Size	Weight	Price
100 gal.	30x30x57	350 lbs.	\$96.00
60 gal.	26x30x40	275 lbs.	75.00
25 gal.	26x30x32	200 lbs.	64.00

STYLE "F & H" HEATER

Made in two sizes. Constructed for large roofing contractors. Also used by street contractors. Wheels 36 inches in diameter, 3x½ inch tread. Moves easily on any character of new or rough roads. Made to track 5 feet 2 inches wide, 2 inch solid crank axle, reinforced sides. Furnished with wood or iron wheels, with or without faucet. Has closed fire bottom. The quickest heater on the market.



Fig. 596B

STYLE "F" 100 GALLON CAPACITY

3 feet 6 inches high.
Size, 48x33 inches.
Made of No. 12 fire box steel.
Weight, 625 lbs.
Price each.....\$198.00

STYLE "H" 50 GALLON CAPACITY

3 feet 6 inches high.
Size, 28x34 inches.
Made of No. 12 fire box steel.
Weight, 500 lbs.
Price each.....\$158.00



Fig. 596C

STYLE "D" KETTLE

Constructed to take care of the average roof. Can also be used by street and water proofing contractors for heating water or any other substance. Inside tank welded throughout, guaranteed non-leakable. Has closed fire bottom and door.

Capacity, 1½ barrels or 50 gallons.
Size, 28x34 inches.
Weight, 200 lbs.
Made of No. 12 fire box steel throughout.

Price each.....\$66.00



Fig. 507A.

STYLE "A" NON-LEAKABLE WELDED PORTABLE ASPHALT HEATER

Made in three sizes, especially constructed for road, street and municipal contractors. Outer shell made of $\frac{1}{8}$ inch boiler steel thoroughly reinforced; all seams welded. Inside tank made of $\frac{1}{8}$ inch boiler steel, easily removed for cleaning; all seams welded. Removable lid, lined fire box and cast iron grate bars. Wheels constructed for hard and heavy use, 30 inches in diameter, $4\frac{1}{2}$ inch tread. Handle constructed of "T" bar.

125 gallon capacity.....each,	\$166.00
175 gallon capacity..... "	214.00
225 gallon capacity..... "	250.00



Fig. 507B.

STYLE "B" NON-LEAKABLE WELDED FOUR WHEEL ASPHALT TAR AND PITCH HEATER

Especially constructed for street and municipal contractors. Outer shell made of $\frac{1}{8}$ inch boiler steel, thoroughly reinforced, all seams welded. Inside tank made of $\frac{1}{8}$ inch boiler steel, all seams welded, easily removed, lined fire box, cast iron grate bars and removable lid. Wheels designed and set to withstand long and hard use.

300 gallon capacity.....each,	\$388.00
400 gallon capacity..... "	450.00
500 gallon capacity..... "	516.00

Larger sizes on application.

STYLE "C" ARCH NON-LEAKABLE WELDED ASPHALT, TAR AND PITCH KETTLE

Constructed for roofers who roof large areas. Has no equal in construction for strength. Will stand up under any kind of use. Round corners; can dip clean. Also used by street contractors to lay rails where pitch is used as a binder.

Constructed of No. 12 fire box steel throughout. Weight, 175 lbs. Size, 30x30x40. Capacity, three barrels or 100 gallons.....each \$48.00



Fig. 507C.

FOR DIPPERS, TAMPERS, AND PAILS, SEE INDEX

STREET AND SIDEWALK CONTRACTORS' EQUIPMENT

STANDARD TOOL HEATER AND FIRE WAGON

This Wagon is strong and substantial. Made of $\frac{3}{8}$ inch boiler steel with sides and heads perforated. Has $3\frac{1}{2}$ inch flange around top. Is fitted with sloping ash pan to facilitate cleaning. Has removable grate bars made in sections easily replaced. Has arched tool supports; also cross bars and hooks for holding melting pots.

Length of body, 5 feet 6 inches; width of body, 2 feet 7 inches; depth, 1 foot.

Front wheels, 18 inches in diameter, $4 \times \frac{3}{8}$ tire, 2 inch square axle. Rear wheels, 24 inches in diameter, $4 \times \frac{3}{8}$ tire, 2 inch square axle. Weight, 1150 lbs. List price each.....\$250.00



Fig. 593A

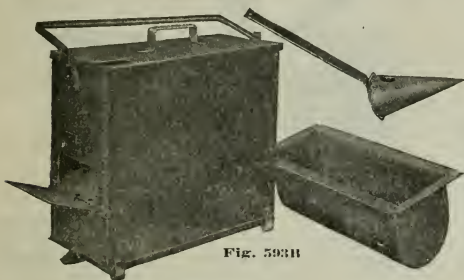


Fig. 593B

CAULKING FURNACE

This handy Caulking Furnace will be appreciated by all caulkers as a light, well-made furnace, which will do away with building fires on streets and at the same time affords the caulker a clean, neat furnace, large enough for any job, yet as compact as a suit case.

All tools, material, fuel, overalls and funnel can be packed into bottom fire place, and the entire furnace kettle and all carried around as handy as a suit case.

Size: 16 inches high, 18 inches long, 9 inches wide. Weight, about 19 lbs.

List price complete.....\$7.50

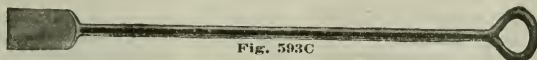


Fig. 593C

ROOFERS' BARS

We carry in stock a full line of bars of every description, from the lightest to the heaviest, all made with steel ends, well tempered.

Price each.....\$4.00



Fig. 595D

POURING CAN

Cut represents a Can for filling seams in brick or wood pavements. Has cast iron point, wood handle and $\frac{3}{8}$ rod to control flow, made of galvanized steel. Very cheap and useful.

Price each.....\$1.50

MORTAR AND CEMENT MIXING PAN

Made of No. 12 fire box steel, with welded corner, making same non-leakable. Especially made for roofers and building contractors. Has four handles.

Length, 8 feet. Width, 3 feet 4 inches. Depth, 8 inches. Weight, 150 lbs. Capacity, 17 cubic feet.

List price each.....\$33.00

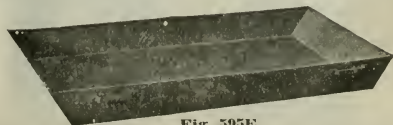


Fig. 595E

ASPHALT AND CONCRETE TOOLS

ASPHALT PATCHING HOE

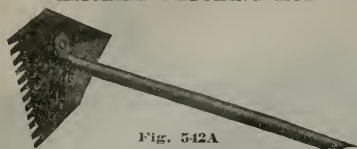


Fig. 542A
No. 10 Steel

Blade 10 inches wide by $8\frac{3}{8}$ inches high; stamped teeth one side 1 inch pitch by 1 inch deep. $\frac{1}{4}$ inch pipe handle, length 7 feet 10 inches.

Each\$3.50

SMOOTHING IRONS



Fig. 590E

Made of cast iron, ground to a smooth curve surface, provided with $1\frac{1}{4}$ " pipe handle bent at end and with steel stud which is cast in smoother, to which pipe is welded.

Made in two sizes.

13x8", weight 50 lbs.....\$7.00
10x7", weight 40 lbs.....5.50

ASPHALT RAKE

Steel

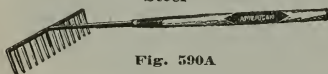


Fig. 590A

14 teeth.....per doz. \$18.75

STONE RAKE
Extra Heavy Malleable Iron.

Fig. 590B

16 teeth, 4x20 inches.....per doz. \$22.00

COMMON STEEL GARDEN RAKE

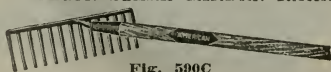


Fig. 590C

12 teeth, $5\frac{1}{2}$ ft. handle.....per doz. \$6.75

ASPHALT SANDALS



Fig. 542B

Per doz. pairs.....\$27.50

TWO-MAN STONE RAKE

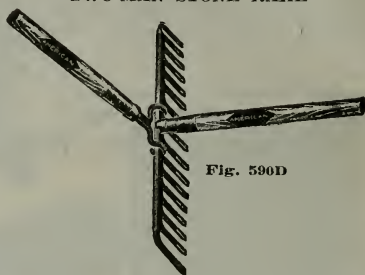


Fig. 590D

10 teeth.....per doz. \$31.80
12 teeth....." " 35.60
14 teeth....." " 39.35

BULL POINTS

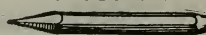


Fig. 542C

Octagon, Tool Steel, Hand Tempered
Any weight, per lb.....\$0.20

BULL POINT HANDLES

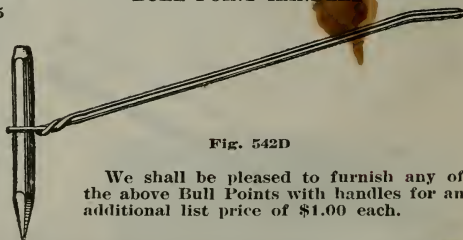


Fig. 542D

We shall be pleased to furnish any of the above Bull Points with handles for an additional list price of \$1.00 each.

ASPHALT CUTTERS

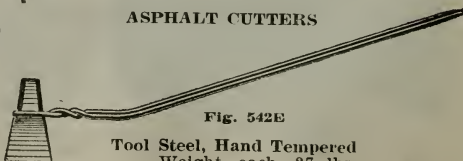


Fig. 542E

Tool Steel, Hand Tempered
Weight, each, 27 lbs.
Each\$4.50

ROOFERS' SUPPLIES

MASTIC BOILERS

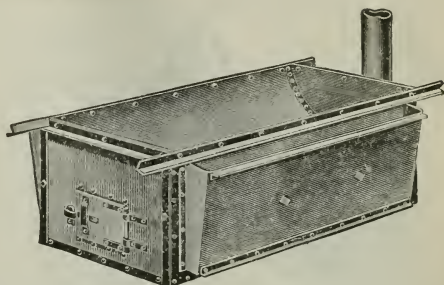
Special Mastic Boilers are provided with bottoms so constructed to allow the boiler being knocked down to clean or ship.

Made of heavy black steel with all corners well angled and braced. Has large fire space.

By removing a few bolts this boiler can be set in small space. Note the sand heating pockets.

Capacity about 100 gallons.

Price \$60.00



GALVANIZED PAY OFF PAILS



For those who wish a good, inexpensive Pay Off Pail the above cuts show a galvanized pail with all seams riveted and soldered, made with flat or round spouts.

Price with either spout \$3.00

MOP PAIL—DIPPER HOISTING PAIL



Fig. 1 Mop

Fig. 1 Dipper

Fig. 1 Hoist

We believe the Wyman Riveted Pails and Dippers to be the best ever put on the market. They are used by a large majority of the roofers in Chicago. All work is made of steel (double annealed), with Norway Iron trimmings, closely riveted.

The dipper handle is riveted to heavy plate and brazed. This is then riveted to body of dipper.

Pails have convexed bottom, which allows pails to be moved over felt without danger of cutting.

No. 1. Mop Pail, 8 gallons.....Each \$4.50
No. 1. Hoisting Pail, 6 gallons... " 4.00
No. 1. Dipper, 1½ gallons..... " 2.50

MOP PAIL—DIPPER HOISTING PAIL



Fig. 2 Mop

Fig. 2 Dipper

Fig. 2 Hoist

For those who desire a cheaper set of Pails and Dippers we are now furnishing the above—seamed. These goods are well made, hold the same as the riveted Pails and with care will last and give good satisfaction. They are machine seamed and one grade of iron lighter than the Riveted Pails.

No. 2. Mop Pail, 8 gallonsEach \$3.00
No. 2. Hoisting Pail, 6 gallons ... " 2.75
No. 2. Dipper, 1½ gallons..... " 1.60
No. 3. Mop Pail shown below..... " 2.00
No. 3. Hoisting Pail shown below.. " 1.75

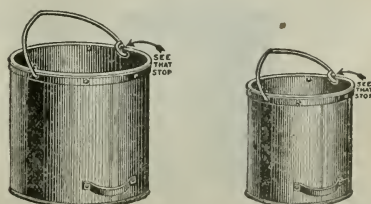


Fig. 3 Mop

Fig. 3 Hoist

ROOFERS' SUPPLIES

PAY OFF PAIL

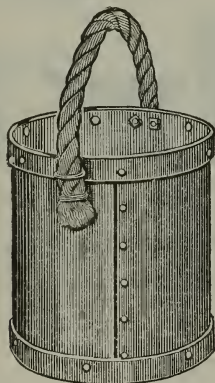


The old reliable Lyman Pay Off Pail has been on the market for years, is used by most contractors, and we have never had one returned for repairs.

Made of heavy black steel with all joints closely riveted and brazed. Has raised bottom and swing handle, top, bottom and hood are protected with bands. Spouts are riveted and brazed.

Price, Pail.....\$5.00
Price, Spouts, each..... 1.00

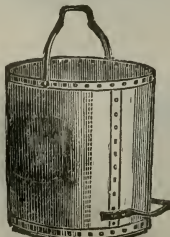
GRAVEL PAIS



Made of black steel, raised bottom, top and bottom bands.

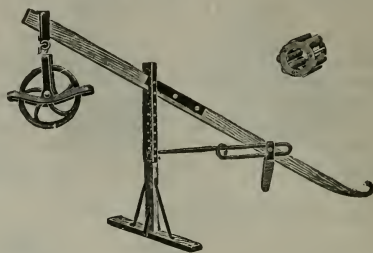
This pail has rope handle stapled to outside, can't slip and will last for years. A trial will convince you they are the best. Price, per dozen.....\$18.00

CARRYING PAIL



Made of heavy black steel, closely riveted, and has top and bottom bands, swing handle. Used in connection with Pay Off Pails. Price.....\$3.00

ROOFERS' DERRICK AND WHEEL

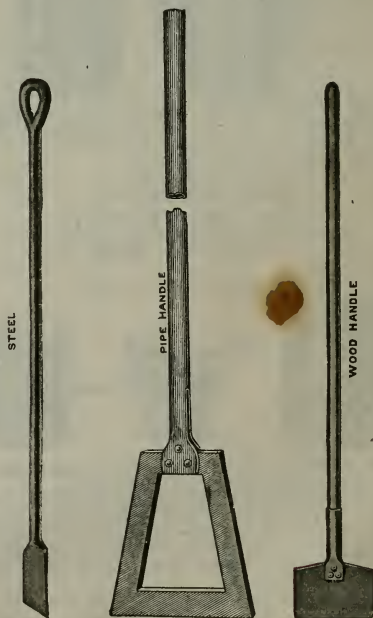


We offer the roofers a derrick which we believe will meet with their approval; made of second growth hickory, free of knots; well ironed. Carried in stock in light and heavy style.

Price, heavy.....\$18.00
Price, light..... 16.00

Our Roofers' Wheel is heavy cast, with wrought iron shield and hook, roller bearing. Price....\$4.00

ROOFERS' BARS



Mastic Mixing Bar

We carry in stock a full line of bars of every description, from the lightest to the heaviest, all made with steel ends, well tempered.

Light steel.....\$2.50
Heavy steel..... 2.00
Steel with wood handle..... 1.50
Mastic mixing bar..... 2.00

FOR ROOFERS' BROOMS, MOPS AND KNOT BRUSHES, SEE INDEX

OAKUM

50 lb. Bales

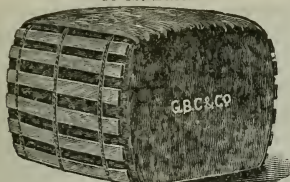


Fig. 41A

Best	per bale \$.
U. S. Navy	"
Navy	"
Best, spun	"
U. S. Navy, spun	"
Navy, spun	"
Plumbers, spun	"
Rope Oakum	"

COTTON WICKING

In Balls—Bale Lots

Braided, in coils	per lb. \$.
Rope Laid, in coils	"
Chandlers', 3 lb. balls	"
A, 2 oz. balls	"
Diamond B, 2 oz. balls	"
H, 2 oz. balls	"
K or Melrose—RR.	"

SPUN COTTON

50 lb. Bales

Yacht, 5 ply	per lb. \$.
Navy, 3 ply	"

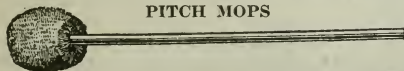
TOW

100 lb. bales	per lb. \$.
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EXCELSIOR

100 lb. bales	per lb. \$.
---------------	-------------

PITCH MOPS



Wool, with handles	per doz. \$4.50
--------------------	-----------------



Fig. 41B

CANDLES

"Electric"

Made of paraffine wax. Smokeless, odorless and dripless. Eight to the pound, 40 pound cases.
Full cases per lb. \$0.17
Broken cases " .21

Coach Candles

3 and 5 to pound, 40 pound cases	per lb. \$0.19
Broken cases	" .23

Plumbers' Acid Candles

For plumbers, steam fitters and those who need a high grade candle.
3, 5 and 12 to the lb., 40 lb. case only. per lb. \$0.21
Broken cases " .25

PINE TAR



Fig. 41C



Fig. 41D

Barrels, about 50 gallons	each \$.
Half barrels, about 30 gallons	"
Five gallon cans	per doz.
One gallon cans	"
Half gallon cans	"
Quart cans	"
Pint cans	"

NAVY OR PINE PITCH

Barrels, about 250 lbs.	each \$.
Boxes, 5, 10, 25, 50 and 100 lbs.	per lb.

COAL TAR



Fig. 41E

Barrels, about 50 gallons	each \$.
Five gallon cans	"
One gallon cans	"

TALLOW

Refined cylinder tallow in bulk and barrels.

Barrels, about 400 lbs.	per lb. \$0.22
Case lots, 20 5-lb. cakes	" .24
Lesser quantities	" .30

COAL TAR PITCH

Composition

Barrels, about 360 lbs.	per lb. \$.
Boxes, 5, 10, 25 and 50 lbs.	"

RESIN

"F" Grade

Barrels, about 460 lbs.	per lb. \$.
Boxes, 5, 10, 25 and 50 lbs.	"

PITCH LADLES

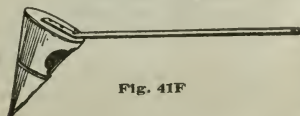


Fig. 41F

Iron	per doz. \$6.00
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WE HAVE IN STOCK AT ALL TIMES A COMPLETE LINE OF THE ABOVE SPECIALTIES AT THE LOWEST MARKET PRICES

ROOFING PAPER



CERTAIN-TEED ROOFING

1, 2 and 3 Ply Smooth Surfaced

Made from long fibred, soft, absorbent rag stock felt carrying extra abundant saturation of the Certain-Teed blend of asphalts, the slowest drying saturation science has developed. No coal tar or quick drying saturants are used. Rolls 32 inches wide, containing 108 square feet (8 feet for laps). Large Head Nails and Lap Cement with directions in each roll.

1-ply, guaranteed 5 years, weight about 35 lbs. complete
 2-ply, guaranteed 10 years, weight about 45 lbs. complete
 3-ply, guaranteed 15 years, weight about 55 lbs. complete

CERTAIN-TEED SHINGLES

Red or Green Slate Surfaced

Combine permanent color, beauty, fire protection, great durability and low cost. The beautiful color of the crushed slate is natural and so cannot fade. Size 8x12 $\frac{3}{4}$ inches. Laid $\frac{1}{2}$ inch apart and 4 inches to the weather. 424 shingles to a square—about 230 lbs. 4 cartons to a square.

CERTAIN-TEED ROOFING

Red or Green Slate Surfaced

Same material as Certain-Teed Shingles but in roll form. Put up and packed the same as Certain-Teed Roofing. Weight about 80 lbs. per square complete.

MAJOR ROOFING

Well up to the quality standard of the average first grade roofings offered by most manufacturers. Put up and packed the same as Certain-Teed Roofing.

1-ply, weight about 35 lbs. complete
 2-ply, weight about 45 lbs. complete
 3-ply, weight about 55 lbs. complete

GUARD ROOFING

Makes a waterproof and entirely satisfactory roof for temporary purposes. Put up and packed the same as Certain-Teed Roofing.

1-ply, weight about 35 lbs. complete
 2-ply, weight about 45 lbs. complete
 3-ply, weight about 55 lbs. complete

SENTINEL ROOFING

Made specially to enable the trade to meet any price competition. Contains no coal tar. Better than the old time Tar Ready Roofing. Put up and packed the same as Certain-Teed Roofing.

1-ply, weight about 35 lbs. complete
 2-ply, weight about 45 lbs. complete
 3-ply, weight about 55 lbs. complete

Write for Prices. We are prepared to furnish one roll or a train load at lowest market price.

FELT, SHEATHING, PLASTER AND WALL BOARD, ROOFING SUPPLIES

INSULATING PAPER BLACK CARBONIZED

A strong paper saturated and coated with the finest grade blend of Asphalts. Specially designed for Ice Houses, Refrigerators, and wherever insulation against moisture is desirable. Odorless. Acid proof. Vermin proof.

Medium. Weight about 20 lbs. in 500 sq. ft. rolls, 36 in. wide.
Heavy. Weight about 35 lbs. in 500 sq. ft. rolls, 36 in. wide.
Ex. Heavy. Weight about 45 lbs. in 500 sq. ft. rolls, 36 in. wide.

Saturated only

No. 30 Insulator. Weight about 30 lbs. in 500 sq. ft. rolls.
No. 45 Insulator. Weight about 45 lbs. in 500 sq. ft. rolls.

SLATERS FELT

Slaters Asphalt Felt. 32 in. wide, about 30 lbs. per roll of 100 sq. ft.

TARRED FELT

No. 1. 32 in. wide, about 20 lbs. per 100 sq. ft., 216 sq. ft. per roll.
No. 2. 32 in. wide, about 15 lbs. per 100 sq. ft., 324 sq. ft. per roll.
No. 3. 32 in. wide, about 12 lbs. per 100 sq. ft., 500 sq. ft. per roll.
Stringed Felt. 32 in. wide, about 22 lbs. per roll of 250 sq. ft.
Stringed Felt. 32 in. wide, about 44 lbs. per roll of 500 sq. ft.
Slaters Felt. 36 in. wide, about 30 lbs. per roll of 500 sq. ft.

ROSIN SIZED SHEATHING

No. 20. About 20 lbs. in 500 sq. ft. rolls, 36 in. wide.
No. 25. About 25 lbs. in 500 sq. ft. rolls, 36 in. wide.
No. 30. About 30 lbs. in 500 sq. ft. rolls, 36 in. wide.
No. 35. About 35 lbs. in 500 sq. ft. rolls, 36 in. wide.
No. 40. About 40 lbs. in 500 sq. ft. rolls, 36 in. wide.

DEADENING FELT

No. 40. Width 36 in., about $\frac{3}{4}$ lb. to the sq. yd., rolls contain 50 sq. yds.
No. 50. Width 36 in., about 1 lb. to the sq. yd., rolls contain 50 sq. yds.
No. 75. Width 36 in., about $1\frac{1}{2}$ lbs. to the sq. yd., rolls contain 50 sq. yds.
No. 100. Width 36 in., about 2 lbs. to the sq. yd., rolls contain 50 sq. yds.

WALL BOARD

Made of clean wood fibre. Sized thoroughly to take paint and to resist moisture. By actual test the strongest and best waterproofed board made. Affords opportunity for artistic panel effects. An inexpensive material more quickly applied than plaster and without the dirt. For finishing modest houses, for partitioning offices or large rooms, for portable screens, for attics and dens and booths.
Size: Widths, 32 inches or 48 inches. Lengths, 6, 7, 8, 9, 10, 12 14 or 16 ft.

STANDARD BOARD

Made of paper stock. One side sized and finished in a beautiful brown. A very strong board. Sizes same as above Board.

BLUE AND GRAY PLASTER BOARD

250 sq. ft. rolls, 36 in. wide, weigh about 30 lbs.
500 sq. ft. rolls, 36 in. wide, weigh about 60 lbs.

PLASTIC CEMENT

A putty-like compound, durable and perfectly waterproof for plastering over cracks, holes or weak spots in roofs, basements, cisterns, waterspouts, troughs, etc. An excellent waterproofing. Adheres to any surface.

Full or $\frac{1}{2}$ bbls.	50 or 25 lb. pails	Crated 6 10 lb. cans	Crated 36 1 lb. cans
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COAL TAR PITCH or Composition

Barrels, about 360 lbs. per cwt., \$3.00
Boxes, 5, 10, 25 and 50 lbs. per lb., .08

COAL TAR

Barrels, about 50 gallons. each \$10.00
Five gallon cans " 3.50
One gallon can " 1.00



CAPNOL ROOFING NAILS

Hot Galvanized



TIN ROOFING CAPS

Per lb. \$0.10

AMERICAN FELT ROOFING NAILS



No.	Size Ring	Length Shank	No. per lb.	Price per lb.
1	1 1/4	1 1/2	117	\$0.10
3	3/4	7/8	165	.11
4	3/4	3/4	250	.12

Count per lb.	Length	Gauge	Dia. of Head	Galv. per lb.	Plain per lb.
198	1	12	5/8	\$0.08	\$0.06
215	7/8	12	5/8	.09	.07

SEND US YOUR INQUIRIES ON ABOVE LINE, WE ARE PREPARED TO QUOTE LOWEST PRICES

ASBESTOS BUILDING FELT AND SHEATHING, ROOFING AND SIDING PAPER

Owing to almost daily market fluctuations we are unable to insert lists or prices on all items shown on this page, but will be pleased to furnish same on application.



INDRUROID ROOFING

Lap cement and roofing nails included. Put up in one and two square rolls.

1/2 ply, 26 lbs. to 108 sq. ft., 36 in. wide.....	per square \$....
1 ply, 35 lbs. to 108 sq. ft., 36 in. wide.....	"
2 ply, 45 lbs. to 108 sq. ft., 36 in. wide.....	"
3 ply, 55 lbs. to 108 sq. ft., 36 in. wide.....	"

RED ROSIN SHEATHING

500 square feet in roll. 36 inches wide.

Solid, 20-25 lbs. to roll.....	per lb. \$....
Filled, 30-35-40 lbs. to roll.....	"



SILICOAT ROOFING

Lap cement and roofing nails included. One square in roll. Sanded both sides.

1 ply, 55 lbs. to 100 sq. ft., 32 in. wide.....	per square \$....
2 ply, 65 lbs. to 100 sq. ft., 32 in. wide.....	"
3 ply, 75 lbs. to 100 sq. ft., 32 in. wide.....	"



32 inch widths. Weight, rolls, approximately 50 lbs.

No. 1. Tarred felt, 20 to 22 lbs. to 100 sq. ft.....	per lb. \$....
No. 2. Tarred felt, 15 lbs. to 100 sq. ft.....	"
No. 3. Tarred felt, 11 to 12 lbs. to 100 sq. ft.....	"

KEYSTONE PREPARED ROOFING

32 inch width. One square to roll.

Are made of layers of tarred felt cemented together. 2 ply, two layers; 3 ply, three layers. Rolls contain no nails or caps. Each square requires 2 gals. roof coating, 1 1/2 lbs. caps and 1 lb. nails.

2 ply, weight 40 lbs. to square.....	per roll \$....
3 ply, weight 60 lbs. to square.....	"

ASBESTOS BUILDING FELT

Made of the best quality of asbestos fibre. Possesses the highest fireproof and non-conducting qualities, odorless, acid and vermin proof and invaluable as a protection against fire. Used for lining passenger and freight cars, sheathing houses, lining between floors and under slate, tin and iron roofs, also for wrapping furnace pipes. In rolls weighing 75 to 100 pounds, 36 inches wide. Weighing 6 pounds to 100 square feet up to and including 1/4 inch in thickness.

Price	per lb. \$0.08
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ASBESTOS SHEATHING

A white high-grade asbestos fibre is used in the manufacture of our asbestos sheathing, making it light and strong, as well as fireproof.

It is used for special purposes and electrical work, such as wrapping small armatures, etc. Put up same as asbestos felt.

Price	per lb. \$0.10
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SEND US YOUR INQUIRIES FOR ONE ROLL OR A CARLOAD. OUR PRICE IS ALWAYS RIGHT

ASBESTOS PRODUCTS

In purchasing a covering for heated surfaces, it is of the utmost importance to take into consideration the number of years the covering will last and do good service, as well as its powers for resisting high temperature, and its non-conducting properties.

The durability of coverings varies greatly in the different kinds. Some will break or fall off the heated surfaces or become otherwise defective in a year or two. Others, being unable to resist high pressure, become charred or burned and are thus useless as insulators.

A good covering should be one that can be removed when necessary to make changes, or repair leakage or other damage to pipes, and be replaced without injury to itself.

The fittings, such as ells, tees, crosses and valves, are of exactly the same formation as the sectional covering and are so shaped as to fit any of the joints perfectly without extra labor being required to trim or form them so as to make neat, perfect joints.

The covering and fittings are furnished ready for application, a sufficient quantity of small staples being supplied with each shipment.



"Imperial" All Asbestos Pipe Covering

Sectional View
"Celasbestos".

"Celasbestos" Sectional Pipe Covering



"W. B." Pipe Covering

Eureka Pipe
Covering

Asbestos Moulded Covering

"IMPERIAL" ALL ASBESTOS PIPE COVERING

Our "Imperial" is made of alternate layers of pure indented asbestos felt, and plain asbestos felt, wire stitched at the edges, and covered with a heavy canvas jacket.

It is light in weight, will stand all extremes of heat, is firm and elastic, will not sag on the pipes, is not affected by moisture, will not crack nor crumble from vibration, can be removed and replaced a hundred times if necessary without injurious results as it is practically indestructible. It is an ideal covering for train pipes and has been adopted by many railway companies for that purpose.

"CELASBESTOS" SECTIONAL PIPE COVERING

For High Pressure Steam Pipes. This covering is formed in regular sections three feet in length, of alternate layers of plain and fluted asbestos, canvassed on the outside, and secured to the pipes with metal bands. It is light in weight; strong, fireproof, non-conducting, not injured by steam or moisture, and easily applied, entirely suited for all high pressure work. Will not crack or powder from vibration of pipes. Made in three thicknesses, $\frac{1}{2}$ inch, $\frac{3}{4}$ inch and 1 inch.

NOTE—Our "Imperial" All Asbestos Fittings are supplied with this covering.

"W. B." PIPE COVERING

The perfection of insulating protection for steam pipes and all heated surfaces. There are no better non-conductors of heat known than asbestos and wool felt, and in our "W. B." covering these have been combined, producing the best results, there being consecutive layers of asbestos (about one-eighth of an inch thick) about the pipe, outside of this the wool felt with a canvas cover or jacket. This covering is easily applied, is removable and lasts as long as the pipes themselves. Will not crack, crumble or fall away from the pipes. When necessary staples are used in applying.

ASBESTOS MOULDED COVERING

Asbestos Moulded Covering will stand heat of the highest steam pressure without disintegrating, and being chemically treated in its manufacture, it is not affected by moisture. If this covering is soaked in water and dried again, it becomes as hard and firm as when originally made. It is a good non-conductor, very durable, and will outwear any other similar covering on the market.

This covering is made of asbestos fibre and other light non-conducting materials. It is very strong; is absolutely fireproof and is adapted for highest steam pressure. It will not crack and is made to fit pipes of all diameters from one-half inch upward. The fittings are furnished of the same materials and fit perfectly.

It can be easily applied to hot or cold pipes by any practical man. We always send with this covering sufficient metal bands to securely fasten it to the pipes.

EUREKA PIPE COVERING

For all low pressure steam pipes and hot water pipes, we consider this to be an excellent covering, filling all requirements. It is made of wool felt and asbestos. Sections three feet long, canvas covered, with fittings for ells, tees, valves, etc., of same material.

We sometimes supply for rough or temporary work this same covering without the canvas jacket at a slightly reduced price.

STANDARD PRICE LIST OF SECTIONAL PIPE COVERINGS AND FITTINGS

When asking for quotations always state steam pressure for which covering is to be used.

Prices of covering shown in this list are for liberal feet.

Size	Covering	Ells	Tees	Crosses	Valves	Size	Covering	Ells	Tees	Crosses	Valves
$\frac{1}{2}$	\$0.22	\$0.30	\$0.36	\$0.48	\$0.54	4	\$0.60	\$0.60	\$0.75	\$0.95	\$1.50
$\frac{3}{4}$	.24	.30	.36	.48	.54	4 $\frac{1}{2}$	.65	.72	.90	1.10	1.85
1	.27	.30	.36	.48	.54	5	.70	.90	1.20	1.50	2.25
1 $\frac{1}{4}$	.30	.36	.48	.54	.60	6	.80	1.30	1.60	2.00	2.80
1 $\frac{1}{2}$	.33	.30	.36	.48	.54	7	1.00	1.80	2.20	2.80	3.60
2	.36	.36	.42	.54	.60	8	1.10	2.40	3.00	3.60	4.40
2 $\frac{1}{2}$	.40	.42	.48	.60	.78	9	1.20	3.00	3.80	4.40	5.30
3	.45	.48	.54	.70	.96	10	1.30	3.60	4.60	5.20	6.20
3 $\frac{1}{2}$	.50	.54	.60	.80	1.20	12	1.85	.....	.....	.....	.....

NOTE—For all pipes above ten (10) inches the use of Asbestos Moulded Blocks is recommended.

ASBESTOS PRODUCTS

HOT WATER PIPE COVERING

Same construction as Eureka covering, wool felt with asbestos next to the pipe. About ½ inch thick, canvas jacket.

A most suitable covering for hot water pipes, return pipes, hot air, etc., also for use in basements where it is desired to keep certain rooms or apartments cool. In sections 3 feet long.

See Price List on Preceding Page.

AMMONIA AND BRINE PIPE COVERING

We carry a special covering for these purposes. In chemical plants, breweries, cold storage houses, etc., a great deal of damage is done by the sweating of pipes, and considerable loss is experienced. By the use of these coverings, this is avoided, and the saving will, in a short time, fully repay for the expense of covering the exposed pipes and surfaces.

CAUTION—In applying the Ammonia and Brine Pipe Coverings, great care should be exercised to form perfectly air and water-tight joints otherwise the covering will prove useless. We furnish a special cement in liquid or paste form for this work, also for covering all fittings. When this cement and waterproof canvas are used, and care is exercised to see that all laps come on the under side of the pipe, there can be no possibility of moisture working in and injuring the covering itself. Liberal use of this cement is recommended.

See Price List on Preceding Page.

ASBESTOS AND HAIR FELT COVERING

An excellent non-conductor, light in weight. Suitable for all ordinary steam pressure. Made in sections 3 feet long. Composed of an inner lining of heavy asbestos felt, then standard hair felt covering with another layer of asbestos felt and finally finished with a heavy sized paper. We can also supply it with canvas cover if desired.

The outer layer of asbestos is used to protect the hair felt and render the covering more fireproof. The necessary staples and strips for covering and fastening all laps and joints are always included in making shipments. Special fittings go with this covering.

See Price List on Preceding Page.

FROST PROTECTIVE COVERING

To prevent freezing in gas and water pipes, we furnish, in 3 feet sections, a covering that is most economical and efficient.

When pipes are exposed we can supply a wrapper of canvas, which can be painted, or of waterproofed felt.

See Price List on Preceding Page.

TAKE NOTE—Where any of the aforementioned coverings are exposed to the weather, or where moisture or dampness are liable to affect their usefulness or durability, we can supply a heavy canvas cover which has been thoroughly saturated with pure asphalt and other waterproof and preservative materials.

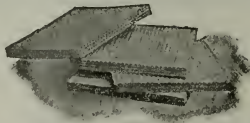
HAIR FELT

In bales of 300 square feet, standard thickness, always in stock.

Standard Price List of Hair Felt.

¼ in. thick.....	per square foot	\$0.04	1 in. thick.....	per square foot	\$0.07½
⅜ in. thick.....	" "	".04½	1½ in. thick.....	" "	".09½
½ in. thick.....	" "	".04¾	2 in. thick.....	" "	".11
¾ in. thick.....	" "	".06¾			".14

BOILER COVERING OR LAGGING



"IMPERIAL" ALL ASBESTOS BOILER COVERING OR LAGGING

The "Imperial" boiler covering or lagging is essentially of the same formation as the covering heretofore mentioned with the exception of being in sheet form.

It is furnished with or without canvas jacket and can be fastened when applied, by using staples, or the sections can be laced together.

It is recommended for covering large or irregularly shaped surfaces such as upright and horizontal boilers, both stationary and portable, drums, domes, heaters, stills, breechings, etc.

Cement work when torn off for repairs to the heated surfaces has to be replaced with new material, whereas the "Imperial" can be laid aside, the work completed and the same section replaced. The elasticity is another good feature, allowing the covering to be shaped to fit almost any irregular surface. As a covering for locomotives and marine boilers it is vastly superior to others and has merits that recommend it for these uses. As a result of constant jarring some covering will crumble and fall away while the "Imperial" will remain as firm and useful as when first applied. Stock size sheets 24x36 inches. Special sizes and shapes to order.

CELASBESTOS FIREPROOF LAGGING BLOCKS

Made in blocks or sheets formed by use of successive layers of our Celasbestos as described on another page. The layers are placed so that the air space runs at right angles to that in the adjoining layers.

The sheets are adapted for all heat insulating purposes, such as covering boilers, heaters, large flues, ceilings, fire doors, etc.

Any thickness from ½ to 3 inches. Stock sizes 3x3 feet. Special sizes as required.

Can be conformed to any curved surface by slitting a few layers on the under side.

For prices, see table at bottom of this page.

ASBESTOS MOULDED BLOCKS

There are many large surfaces such as boilers, stills, domes, heaters, etc., that cannot be covered with the sectional covering and for this work we especially make moulded blocks, which are easily applied to the surface and can be securely and cheaply fastened by the use of a large mesh wire screen. To make a more presentable appearance this screen can be covered with a thin coat of our asbestos cement felting, thus giving the work a smooth finished appearance. Special sizes, shapes and thicknesses made to order.

Made in blocks or slabs 3 or 4 inches wide, 18 inches long and 1 or 1½ inches thick.

Standard Price List For Sheet and Block Coverings

Thickness Inches	Price per sq. foot	Thickness Inches	Price per sq. foot	Thickness Inches	Price per sq. foot	Thickness Inches	Price per sq. foot
½	\$0.27	1½	\$0.42	2½	\$0.64	2	\$0.87
¾	.27	1½	.45	2½	.68	3	.90
1	.30	1½	.49	2½	.72	3½	.98
1	.30	1½	.53	2½	.75	3½	1.05
1½	.34	1½	.57	2½	.79	4	1.20
1½	.38	2	.60	2½	.83	....	....

ASBESTOS PRODUCTS



ASBESTOS CEMENT FELTING

A dry cement, prepared by mixing asbestos fibre and other non-conductive and cementing materials to render them available for covering large and irregularly shaped surfaces, such as boilers, stills, domes, heaters, etc. When mixed with water to the proper consistency, it is easily applied either by hand or with a trowel. We furnish this cement in two qualities.

"A" Brand	per sack	\$3.50
"B" Brand	"	3.00

NOTE—In applying our cement coverings, better results can be obtained when they are applied over an air-space formed of wire cloth and studs.

ASBESTOS FLEXIBLE ROOFING CEMENT

Composed of finely ground asbestos mixed with iron paint and other water and acid-proof materials. Prepared ready for use; elastic and very adhesive.

Used for cementing or patching tin, metal or composition roofs, around chimneys, skylights and dormer windows. For imbedding tile or slate and repairing leaks of all kinds. Supplied in red, brown or black colors.

Will not become hard and useless when opened unless left exposed for a considerable time.

	Black	Brown	Red
100 lb. tubs	per lb.	\$0.04	\$0.06
25 to 50 lb. tubs	"	.05	.08
10 lb. cans	"	.07½	.10
5 lb. cans	"	.10	.15

ASBESTOS HOT BLAST CEMENT

A strictly first-class fire-proof cement, especially adapted for covering surfaces exposed to a high heat, such as hot blast pipes, smoke pipes, furnaces, retorts, etc., also used as fire-proof deadening under floors and roofs. Covering capacity of this cement, 40 square feet 1 inch thick.

Price per barrel or bag.....\$4.00

ASBESTOS FURNACE CEMENT

For lining heating stoves, furnace doors, repairing broken joints in furnaces, etc.

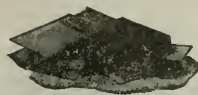
When subjected to intense heat it vitrifies without becoming porous or shrinking. Will not harden if package is unopened.

400 to 600 lb. casks	per lb.	\$0.04
100 lb. tubs	"	.04½
25 to 50 lb. tubs	"	.05½
10 lb. cans	"	.10
5 lb. cans	"	.12
3 lb. cans	"	.15

ASBESTOS RETORT CEMENT

Invaluable for "setting up" or repairing broken clay or iron gas retorts, pipes, etc.; and for cementing joints in stone and metals. Is acid proof and vitrifies under intense heat, very strong and durable. Prepared ready for use, not affected by gas, oils, etc.

400 to 600 lb. casks	per lb.	\$0.04
100 lb. tubs	"	.04½
25 to 50 lb. tubs	"	.05½
10 lb. cans	"	.10
5 lb. cans	"	.12
3 lb. cans	"	.15



ASBESTOS MILL BOARD

One of the most economical packings for chemical works, oil stills, flange joints, cylinder heads, insulation in stoves, ranges and ovens, also for lining grates, ceilings, etc. Fire-proof and acid-proof, made soft, medium and hard. Stock size, 40x40 inches, 42x44 inches and 44x48 inches; special sizes to order. Thicknesses from ½ to 1 inch.

Price per pound.....\$0.10

Note—We are furnishing an extra hard, even and smooth surfaced board for making fire backs or back walls in grates and fire places, natural gas fires, etc. Also extra hard sheets for glass workers' use, cut to any size. We furnish a very superior quality of Asbestos Mill Board for electrical purposes.

Approximate Weight Per Sheet 40x40 Inches

1/16 in.	3½ to 4 lbs.	¾ in. ....	.22 to 24 lbs.
¼ in.	8 to 8½ lbs.	½ in. ....	.30 to 35 lbs.
¾ in.	15 to 16 lbs.		

Intermediate thicknesses, proportionate weights of full cases average 250 to 300 lbs.

ASBESTOS ROLL MILL BOARD

In rolls of ⅜ and ½ inch in thickness, 36 inches wide.

Price per lb.....\$0.10

GLASS HOUSE SHEETS

Hard, stiff, flat sheets of asbestos specially prepared for glass workers' use and for carrying small heated articles.

Price List of Glass House Sheets, Each

Size of Sheet	3 32 in. thick	3 16 in. thick
6x 8 inches	\$0.25	\$0.30
8x 8 inches .....	.26	.32
10x10 inches .....	.27	.34
10x12 inches .....	.29	.37
12x12 inches .....	.32	.42
12x16 inches .....	.45	.55
20x24 inches	1.10	1.35
24x24 inches	1.30	1.65

CELASBESTOS CORRUGATED ROLL LAGGING

Constructed of a layer of corrugated or fluted asbestos paper, backed by a sheet of plain asbestos. An excellent non-conductor for wrapping furnace pipes, hot air flues, to prevent burning of woodwork from overheated pipes. It is flexible, can be easily wrapped around curved surface and fastened with wire or metal bands. Put up in rolls 36 inches wide; 250 square feet to roll.

Price per square foot.....\$0.05

ASBESTOS STOVE LINING CEMENT

A plastic cement composed of asbestos and fire-proof-cementing materials. Used as a bed for laying fire-brick or facing walls subjected to great heat. Lining cooking stoves, heating stoves and furnaces, mending broken iron or brick linings. Will not warp or burn off.

400 to 600 lb. casks	per lb.	\$0.04
100 lb. tubs	"	.04½
25 to 50 lb. tubs	"	.05
10 lb. cans	"	.08
5 lb. cans	"	.10
3 lb. cans	"	.15

FRICTION BOARD

Granite Board

Davy Board

No.	Thick- ness inches	No. of Boards to Bundle	Size of Boards inches	Weight per Bundle about lbs.	Price per lb.	No.	Thick- ness inches	No. of Boards to Bundle	Size of Boards inches	Weight per Bundle about lbs.	Price per lb.
4	$\frac{1}{4}$	4	35x42	50	\$.....	3	$\frac{1}{4}$	3	33x44	50	\$.....
5	$\frac{1}{6}$	5	35x42	50	.....	4	$\frac{1}{4}$	4	33x44	50	.....
6	$\frac{1}{6}$	6	35x42	50	.....	5	$\frac{1}{6}$	5	33x44	50	.....
8	$\frac{1}{6}$	8	35x42	50	.....	6	$\frac{1}{6}$	6	33x44	50	.....
10	$\frac{1}{10}$	10	35x42	50	.....	7	$\frac{1}{4}$	7	33x44	50	.....
						8	$\frac{1}{6}$	8	33x44	50	.....
						9	$\frac{1}{6}$	9	33x44	50	.....
						10	$\frac{1}{10}$	10	33x44	50	.....

RED VULCANIZED FIBRE BOARD

$\frac{1}{2}$ to $\frac{1}{2}$ inch thick in sheets. per lb., \$.....

VALVE SPRINGS—FIBRE BOARD

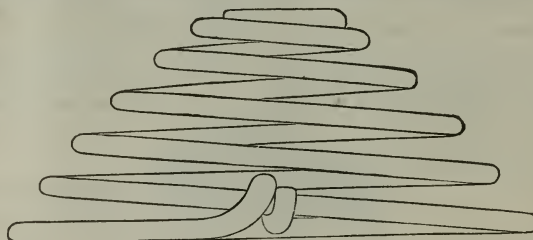


Fig. 351

CONICAL PUMP VALVE SPRINGS

Brass Spring Wire

In ordering state if size given is size of valve or diameter of base of spring.

Size of Wire Gauge	For 1½ in. Valve	For 2 in. Valve	For 2½ in. Valve	For 3 in. Valve	For 3½ in. Valve	For 4 in. Valve	For 4½ in. Valve	For 5 in. Valve	For 5½ in. Valve	For 6 in. Valve	For 7 in. Valve
3	...	...	...	...	...	...	...	...	...	\$1.00	\$1.20
4	...	...	...	...	...	...	...	\$0.60	\$0.80	.90	1.00
5	...	...	...	...	...	\$0.25	\$0.30	.40	.55	.70	.80
6	...	...	...	...	\$0.20	.21	.24	.30	.43	.50	.70
7	...	...	...	\$0.16	.18	.19	.22	.26	.35	.38	.60
8	...	...	\$0.14	.15	.17	.18	.20	.22	.28	.30	.40
9	...	\$0.12	.13	.14	.15	.16	.19	.20	.24	.26	.35
10	...	.11	.12	.13	.14	.15	.18	.19	.20	.24	.30
11	...	.10	.11	.13	.13	.14	.17	.18	.19	.22	.25
12	...	.09	.10	.11	.12	.13	.16	.17	.18	.20	...
13	...	.08	.09	.09	.11	.12	.13	.14	.15	...	...
14	\$0.07	.07	.08	.08	.10	.11	.12	.13	...	...	...
15	.06	.06	.07	.07	.08	.09	.10	...	...	...	...
16	.05	.05½	.06	.06	.07	...	...	...	...	...	...
17	.04	.05	.06	.06	...	...	...	...	...	...	...
Base Diameter of Spring	1½ in.	1½ in.	2¼ in.	2½ in.	3 in.	3½ in.	4 in.	4½ in.	5 in.	5½ in.	6 in.

For Pump Valves, see Index

CEMENT FINISHING TOOLS

 $\frac{3}{8}$ INCH RADIUS NARROW EDGER

Nos. 38, 39

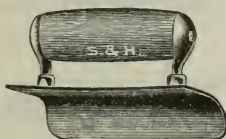
Length 8 inches, width $1\frac{1}{4}$ inch, has a $\frac{3}{8}$ inch turned edge with radius of $\frac{3}{8}$ inch.

No. 38. Iron, Nickel Plated...per doz. \$8.00
No. 038. Bronze " " 17.00

 $\frac{3}{4}$ INCH RADIUS NARROW EDGER

No. 39. Iron, Nickel Plated...per doz. \$8.00
No. 039. Bronze " " 17.00

CURBING EDGER



No. 100

This tool is used for edges of curbs. It has a slightly oval surface. Length $6\frac{1}{2}$ inches, width $3\frac{1}{2}$ inches, 2 inch turned edge, with a radius of $1\frac{1}{2}$ inch.

No. 100. Iron, Nickel Plated...per doz. \$14.40
No. 0100. Bronze " " 21.60

BEVEL EDGER



Nos. 18, 40

For beveling the edge of steps, walks, etc. The following tools are 6 inches long by 2 $\frac{1}{2}$ inches wide.

Tool with $\frac{3}{8}$ inch Bevel
No. 40. Iron, Nickel Plated...per doz. \$7.00
No. 040. Bronze " " 16.00

Tool with $\frac{1}{2}$ inch Bevel
No. 18. Iron, Nickel Plated...per doz. \$7.00
No. 018. Bronze " " 16.00

SQUARE EDGER



No. 17

For finishing edges of steps, walks, carriage blocks, or wherever it is desirable to have edges square. Length 6 inches, width 3 inches, both ends rounded, cutting edge $1\frac{1}{2}$ inch.

No. 17. Iron, Nickel Plated...per doz. \$10.00
No. 017. Bronze " " 17.00

CORNER TOOL



No. 6

For finishing inside corners of steps, etc. Has one end straight and one end curving back, allowing the user to work in corner against framework. Length 6 inches, width of sides $1\frac{1}{2}$ inch.

No. 6. Iron, Nickel Plated...per doz. \$7.00
No. 06. Bronze " " 16.00

RESIDENCE CURB TOOL



No. 45

For finishing top of curb or abutment at sides of residence steps, walks, etc. Has guides which run on the framework. With this tool the top of the curb is finished a perfect half round.

No. 45. Iron, Nickel Plated...per doz. \$18.00
No. 045. Bronze " " 30.00

CURB GUTTER TOOL



Nos. 26, A26

For finishing the curve formed in making a combined curb gutter having the right curvature for this purpose. Length 6 inches, width of sides 3 inches.

No. 26. Iron, Nickel Plated...per doz. \$14.40
No. 026. Bronze " " 24.00

Ten inches long, width of sides 3 inches. Preferred by many workmen on account of the length.

No. A26. Iron, Nickel Plated...per doz. \$20.00
No. A026. Bronze " " 33.00

GUTTER TOOL



No. 8

Used in making gutters for drainage purposes. Length 6 inches, width $3\frac{1}{2}$ inches, 1 inch deep.

No. 8. Iron, Nickel Plated...per doz. \$14.40
No. 08. Bronze " " 21.60

CEMENT FINISHING TOOLS

SIDEWALK JOINTERS



Nos. 1 and 3

Width 2½ in., length 6 in., with both ends rounded, cuts ½ in. deep.

No. 1. Iron, nickel plated.....per doz. \$ 7.00

No. 01. Bronze " 16.00

Jointer, 9 in. long, 3 in. wide, cuts ½ in. deep.

No. 3. Iron, nickel plated.....per doz. \$10.20

No. 03. Bronze " 21.60

JOINTER



No. 5

This Jointer is desirable in making clean sharp joints against the framework, as it has one straight end. Width 3 in., length, 6 in., cuts ½ in. deep.

No. 5. Iron, nickel plated.....per doz. \$ 8.00

No. 05. Bronze " 17.00

JOINTER



No. 27

With fastened handle. This tool has a slightly oval surface. Length 5 in., width 2½ in., cuts ⅞ in. deep.

No. 27. Iron, nickel plated.....per doz. \$ 7.00

No. 027. Bronze " 17.00

NARROW JOINTER



No. 41

Both ends rounded. Width 1¾ in., length 8 in., cuts ½ in. deep.

No. 41. Iron, nickel plated.....per doz. \$ 8.00

No. 041. Bronze " 17.00

NARROW STRAIGHT END JOINTERS



Nos. 42, 36

The following Jointers are 1¾ in. wide, 8 in. long, one straight end and one rounded.

½ inch Cutting Blade

No. 42. Iron, nickel plated.....per doz. \$ 8.00

No. 042. Bronze " 17.00

¾ inch Cutting Blade

No. 36. Iron, nickel plated.....per doz. \$ 8.00

No. 036. Bronze " 17.00

FOR SHOVELS, HOES, ETC., SEE INDEX

DRIVEWAY GROOVERS



Nos. 7, 19, 24

Both ends rounded. These Groovers make wide grooves in the driveway so that horses will not slip. Length 9 in., width 3 in., making U-shaped groove ¾ in. deep.

No. 7. Iron, nickel plated.....per doz. \$10.20

No. 07. Bronze " 21.60

Length 9 in., width 3 inches, making V-shaped groove ¾ in. deep.

No. 19. Iron, nickel plated.....per doz. \$10.20

No. 019. Bronze " 21.60

Length 6 in., width 2½ in., cuts V-shaped groove ¾ in. wide, ½ in. deep.

No. 24. Iron, nickel plated.....per doz. \$ 7.00

No. 024. Bronze " 16.00

DRIVEWAY GROOVER



No. 25

One end straight. Length 6 in., width 3 in., cuts groove ¾ in. wide and ½ in. deep.

No. 25. Iron, nickel plated.....per doz. \$ 8.00

No. 025. Bronze " 17.00

¾ INCH RADIUS EDGER



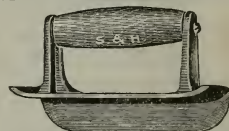
No. 2

Length 6 in., width 2¾ in., has a ¾ in. turned edge, with radius of ¾ in. Both ends rounded.

No. 2. Iron, nickel plated.....per doz. \$ 7.00

No. 02. Bronze " 16.00

¾ INCH RADIUS EDGER



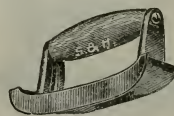
No. 4

Both ends rounded. Length 6 in., width 3 in., has a 1 in. turned edge, with a radius of ¾ in.

No. 4. Iron, nickel plated.....per doz. \$ 8.00

No. 04. Bronze " 17.00

CIRCLE EDGERS



Nos. 57, 58

For finishing inside or outside of any circular work. 5 in. long, 2 in. wide, ¾ in. radius.

Inside Circle Edger

No. 57. Iron, nickel platedper doz. \$ 6.00

No. 057. Bronze " 12.00

Outside Circle Edger

No. 58. Iron, nickel plated.....per doz. \$ 6.00

No. 058. Bronze " 12.00

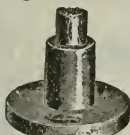
CEMENT AND PLASTER FINISHING TOOLS



Nos. 13, 21, 22

SQUARE CAST IRON CONCRETE TAMPERS

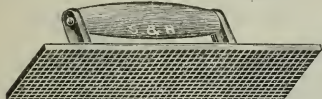
Furnished with 4 ft. hardwood handles
 No. 13. 6x 8 in., weight 16 lbs.....each \$1.30
 No. 21. 8x 8 in., weight 19 lbs..... " 1.50
 No. 22. 10x10 in., weight 27 lbs..... " 2.00



Nos. 72, 73

DIRT TAMPERS

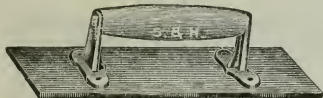
Furnished with 4 ft. hardwood handles.
 No. 72. Round, 6 in. size, weight 15 lbs...each \$1.40
 No. 73. Round, 7 in. size, weight 17 lbs... " 1.60



No. 59

ALUMINUM FLOAT

Cast in one piece from special hard aluminum. Corrugated both ways, which produces a sand finish on walls. Length 10 in., width 4 in.
 No. 59. Corrugated Face.....each \$2.00



No. 52

ALUMINUM FLOAT

A light Float of good wearing qualities, much better than wood or cork. Length 12 in., width 4½ in.

No. 52. Smooth Face.....each \$2.00



Nos. 53, 71, 54

ALUMINUM HAWKS

Face of Hawk has a satin finish which prevents the mortar from slipping when the Hawk is tilted.

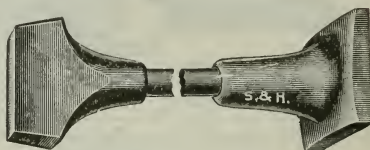
No. 53. Size 13 x 13 in.....per doz. \$33.00
 No. 71. Size 13½ x 13½ in..... " 34.00
 No. 52. Size 14 x 14 in..... " 35.00



Nos. 68, 69

STEEL FACE TAMPERS

Furnished with 4 ft. hardwood handles.
 No. 68. 8x 8 in., weight 15 lbs.....each \$1.80
 No. 69. 10x10 in., weight 18 lbs..... " 2.00



No. 35

PIEN END TAMPERS

Furnished with 4 ft. hardwood handles. This Tamper is used in making steps, curbs, etc. Large end is 3x4 in. Pein end is 1x4 in.

No. 35. Pien End Tamper, weight 11 lbs..each \$1.60



No. 848

ALUMINUM DARBY

Made of special hard rolled aluminum. Provided with 2 detachable wooden handles. Length 40 in., width 3½ in.
 Aluminum Darbyeach \$2.75

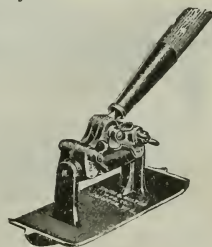


Fig. 849

Cut showing Jointer or Groover attached to clamp and 6 ft. hardwood handle

Clamp fitted with a 6 ft. hardwood handle, nicely finished. This clamp is made from either hard bronze or malleable iron, supplied with 3 strong bolts with steel thumb nuts. One side of clamp has square holes to fit the square shoulder of bolts, thus preventing bolts from turning when tightened. This clamp and handle will meet the demand of any concrete worker because any of our tools can be used in connection with same. Long Handle and Clamp, either in malleable iron or bronze. Weight each. 2½ lbs.....each \$2.00

FOR WHEELBARROWS, HODS, ETC., SEE INDEX

CEMENT FINISHING TOOLS

CORRUGATING TOOL



Fig. 44

For making a rough surface on driveways, walks, etc., to prevent slipping, makes grooves $\frac{3}{8}$ in. deep, $\frac{3}{8}$ in. apart. Length 6 in., width $4\frac{1}{2}$ in.
 No. 44. Iron, nickel plated.....per doz. \$14.40
 No. 044. Bronze " 24.00

ROLLER JOINTER



Fig. 48

For finishing curb and sidewalk joints. Cylinder is 2 in. long, 2 in. in diameter.
 No. 48. Iron, nickel plated.....per doz. \$10.20
 No. 048. Bronze " 18.00

 $\frac{3}{8}$ INCH ROLLER EDGER

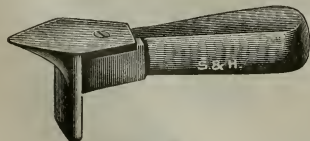
Figs. 49 and 50

Cylinder is 2 in. long, 2 in. in diameter with $\frac{3}{8}$ in. turned edge, having $\frac{3}{8}$ in. radius.
 No. 49. Iron, nickel plated.....per doz. \$10.20
 No. 049. Bronze " 18.00

 $\frac{3}{8}$ INCH ROLLER EDGER

Cylinder is 2 in. long, 2 in. in diameter, with 1 in. turned edge, having $\frac{3}{8}$ in. radius.
 No. 50. Iron, nickel plated.....per doz. \$10.20
 No. 050. Bronze " 18.00

RADIUS TOOLS



Figs. 23 and 11

For laying out and finishing curves and circles. Its shape permits the finishing of either the inside or outside of any size circular work.

Tool with $\frac{3}{8}$ inch Radius

No. 23. Iron, nickel plated.....per doz. \$ 6.00
 No. 023. Bronze " 12.00

Tool with $\frac{1}{4}$ inch Radius

No. 11. Iron, nickel plated.....per doz. \$ 6.00
 No. 011. Bronze " 12.00

LONG HANDLE TROWEL

Made from the best tempered steel. Mountings and handle cast in one piece from aluminum and riveted securely to blade. This tool is light and strong, and will stand hard usage. The knuckle makes it possible to work in any angle. Trowels 20 in. and 24 inches long, width 5 inches, fitted with a 6 ft. hardwood handle and adjustable clamp.

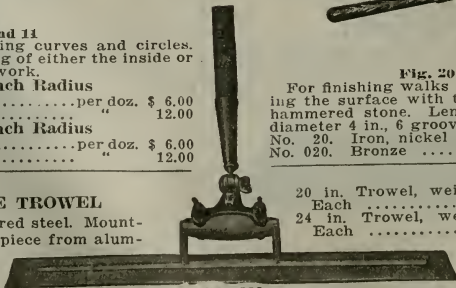


FIG. 839

20 in. Trowel, weight each $2\frac{3}{4}$ lbs.
 Each \$4.00
 24 in. Trowel, weight each 4 lbs.
 Each 4.50

LONG HANDLE
FLOAT

Made of aluminum. Built and mounted like the steel trowels. Length either 20 or 24 in., width 5 in., fitted with a 6 ft. hardwood handle and adjustable clamp.
 20 in. Float, weight each $4\frac{1}{4}$ lbs.....each \$5.50
 24 in. Float, weight each $4\frac{1}{2}$ lbs..... " 5.75

RAISED TUCK POINTER



Fig. 12

Used by masons for making raised beading or pointing between cement blocks, stone, brick, etc. Length over all $9\frac{1}{2}$ in., length of blade 5 in. Width of blade made in following sizes:

$\frac{1}{8}$ in., $\frac{1}{4}$ in., $\frac{3}{8}$ in., $\frac{1}{2}$ in., $\frac{3}{4}$ in.
 No. 12. Iron, nickel plated.....per doz. \$ 6.00
 No. 012. Bronze " 12.00

No. 15 INDENTATION ROLLER



Fig. 15

Is used for imprinting surfaces on walks and prevents them from becoming slippery. Makes square impressions $\frac{3}{4}$ in. apart. Length of cylinder 10 in., diameter 4 in.

No. 15. Iron, nickel plated.....each \$ 4.00
 No. 015. Bronze " 12.00

No. 16 DRIVEWAY ROLLER



Fig. 16

For grooving driveways and stable floors so horses cannot slip. Length of cylinder 10 in., diameter 4 in.

No. 16. Iron, nickel plated.....each \$ 4.00
 No. 016. Bronze " 12.00

No. 20 LINE ROLLER



Fig. 20

For finishing walks or sloping places, leaving the surface with the appearance of bush hammered stone. Length of cylinder 10 in., diameter 4 in., 6 grooves to the inch.

No. 20. Iron, nickel plated.....each \$ 4.00
 No. 020. Bronze " 12.00

TROWELS, SCRAPERS AND MORTAR BOXES
STEEL MORTAR BOX

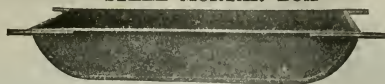


Fig. 582

Are lighter than wooden boxes, are easily kept clean and can be handled by two men.
Stock size, 7 ft. long, 3 ft. wide, 15 in. deep over all. Ample capacity to mix $\frac{1}{2}$ cu. yd. mortar.
Weight, 180 lbs.
Each \$14.00

BRICK TROWELS
PHILADELPHIA PATTERN, No. 10



Fig. 552A

Size, inches	7½	8	8½	9	9½	10	10½
Per dozen	\$ 8.50	9.00	9.50	10.00	10.50	11.00	11.50
Size, inches	11	11½	12	12½	13	13½	14
Per dozen	\$ 12.00	12.50	13.00	13.75	14.50	15.20	16.00

Packed half dozen assorted lifts in box.

LONDON AND PHILADELPHIA PATTERNS



Fig. 552B

Size inches	8'	8½	9	9½	10	10½	11	11½	12	12½	13	13½	14
Per doz.	\$6.25	6.50	6.75	7.00	7.25	7.50	7.75	8.00	8.25	8.50	8.75	9.25	9.50

PLASTERERS' TROWELS



Fig. 552C

Inches, length	10	10½	11	12
Inches, width	4½	4¾	4¾	4¾
Per doz.	\$12.25	12.25	13.50	13.75



Inches	5
Per doz.	\$4.75

POINTING
TROWELS
Fig. 552D

Inches	5½	6	7
Per doz.	5.00	5.25	5.75



PLASTERERS'
CORNER
TROWELS
Inside or
Outside Angle
Fig. 552E

6 inches	per doz. \$7.00
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CONCRETE SPUD OR SIDEWALK SCRAPER

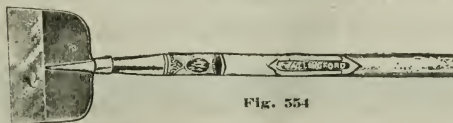


Fig. 554

These tools are useful in many ways, not only in construction work but street railways use them to remove snow and ice from switch frogs. Bill posters remove old posters from bill boards with them, and roofers often use them for ripping old paper from roofs. In addition they are unusually efficient as sidewalk scrapers for removing ice and snow.

Fitted with 4 ft. hickory handles.	
Medium 7 in. blade, 8 in. deep	per doz. \$6.00
Heavy 7 in. blade, 6 in. deep	per doz. 8.00
Extra handles	each .30

FOR WHEELBARROWS, SHOVELS AND MORTAR MIXERS, SEE INDEX

HODS, HOES, CRAYONS

HODS



Fig. 588A. Mortar Hod



Fig. 556. Brick Clamp

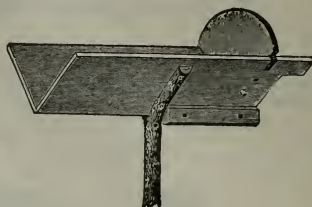


Fig. 588B. Brick Hod

Tin Lined Shoulder Blocks Rough Hickory Handles

Mortar, weight each $12\frac{1}{2}$ lbs. per doz. \$12.00 Brick, weight each $7\frac{1}{2}$ lbs. per doz. \$9.00
 Fig. 556 Brick Clamps each \$2.50

MORTAR HOES

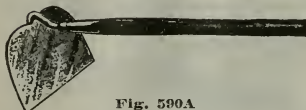


Fig. 590A



Fig. 590B

10-in. blade, solid blade and shank per doz. \$9.00 10-in. blade, solid shank, open blade per doz. \$9.75

RAILROAD CRAYONS OR CHALK

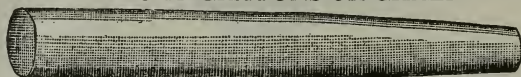


Fig. 251A. 4 inches long, 1 inch diameter, in cases one gross.

White	per gross \$1.00
Blue	" 1.50
Red	" 1.25
Green	" 1.50

CARPENTERS' CHALK

Packed Half Gross in Box

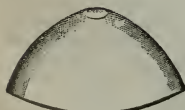


Fig. 251B

White	per gross \$0.90
Red	" 1.10
Blue	" 1.20

SCHOOL CRAYON OR CHALK

White	per gross \$0.25
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SOAPSTONE OR KIEL METAL WORKERS' CRAYONS



Fig. 251C. Flat

SIZES AND LISTS

G. B. C. flat metal workers' crayon	per gross \$3.00
G. B. C. round metal workers' crayon	" 2.00
G. B. C. $\frac{1}{4} \times \frac{1}{4}$ inch square metal workers' crayon	" 2.00
G. B. C. $\frac{1}{2} \times \frac{3}{16}$ inch oblong metal workers' crayon	" 1.50

LUMBERMEN'S CRAYONS AND PENCILS

DIXON'S COLORED LUMBER CRAYONS



First class as to quality of material and richness and permanency of color. Packed one dozen in a box, six boxes in a carton.

HEXAGON SHAPE—PAPER COVERED

	Per gross		Per gross
No. 365. Black	\$ 6.50	No. 520. Red	\$10.00
No. 485. Violet	10.00	No. 520½. Soft Red	10.00
No. 492. Pink	10.00	No. 521. Blue	10.00
No. 493. Orange	10.00	No. 521½. Soft Blue	10.00
No. 495. Brown	10.00	No. 522. Green	10.00
No. 496. Yellow	10.00	No. 523. White	10.00
No. 497. Terra Cotta	10.00		

CARPENTER'S COLORED LUMBER CRAYONS



Carpenter's brand of crayons are high grade crayons, and are a little lower in price than the others listed here. They make a bright, clear, permanent waterproof mark. Packed the same as Dixon's crayons, listed above.

Blue	Per gross	\$7.00	Red	Per gross	\$7.00
Yellow	"	7.00	Black	"	6.00
Green	"	7.00			

It will be noted that the crayons on this page are all labeled "Lumber" crayons. This is simply a name that has come down through the past, and has no particular significance concerning the uses to which the crayons may be put. The crayons on this page are now used by railroads, surveyors, nurseries, textile mills, steel manufacturers, and in shipping rooms as well as by lumber companies, who were the first users of these crayons.

LUMBERMEN'S PENCIL HOLDER



Fig. 251A Nickel Plated

Complete with 36 inch handle	Per doz.	\$12.00
Holder only	"	10.00

PENCILS

Dixon's Office Pencils

No. 3. Hexagon lead pencils, with rubber tip, hard	Per gross	\$4.50
No. 2. Hexagon lead pencils, with rubber tip, medium	"	4.50
Round cedar pencils, with rubber tip	"	1.25
Round cedar pencils, plain	"	.80

CARPENTER'S PENCILS



Fig. 251B

7-inch oval Carpenter's Pencils	per gross	\$2.75
9-inch oval Carpenter's Pencils	"	2.75

STEEL STAMPS AND LOG STAMPS



Steel Log Stamp



Hookeroon



Double End Log Stamp



Cast Iron Log Stamp

PRICES ON HAND CUT LETTERS AND FIGURES



Steel Stamp

No.	Size.	Style.	Alphabet.	Fig.	Steel Stamp.
1	1-32	A B C D E F	\$7 50	\$2 50	30c.
2	1-20	A B C D E F	5 25	1 75	25c.
3	1-16	A B C D E	4 50	1 50	20c.
4	1-12	A B C D	4 50	1 50	20c.
5	1-10	A B C D	4 50	1 50	15c.
6	1-8	A B C I	4 50	1 50	15c.
7	5-32	A B C	5 25	1 75	20c.
8	3-16	A B C	6 00	2 00	25c.
9	1-4	A B	7 50	2 50	30c.
10	5-16	A I	9 00	3 00	35c.
11	3-8	A	10 50	3 50	45c.
12	1-2	A	15.00	5 00	60c.



Letters and Figures in Sets

In Ordering, State
Whether Stamps
are for
Steel or Wood

Only the Best
Quality
of Steel Used
In Our Stamps

$\frac{5}{8}$ inch Letters \$0.75 $\frac{3}{4}$ inch Letters \$1.00 1 inch Letters \$1.35

PRICES ON LOG STAMPS

Steel $\frac{3}{4}$ inch Letters	Steel 1 inch Letter	Steel $1\frac{1}{4}$ inch letter	Cast Iron 1 inch letter
1 letter \$1.50	1 letter \$1.75	1 letter \$2.00	1 letter \$1.25
2 letter 2.25	2 letter 3.00	2 letter 3.50	2 letter 2.50
3 letter 3.25	3 letter 4.00	3 letter 4.75	3 letter 3.50
4 letter 4.00	4 letter 5.00	4 letter 5.75	

Price on Other Sizes Upon Request.

For prices on hookeroons add \$1.00 to price of steel log hammer. Borders of regular shape on steel log stamps \$1.00 additional per inch measuring the longest way. Borders of irregular shape according to size and design. Special price on cast iron log stamps in lots of six or more on application.

SIDEWALK, SEWER PIPE AND CEMENT BLOCK STAMPS AND BRANDS

ROTARY CEMENT STAMP FOR SEWER PIPES AND BLOCKS



Fig. 931

These Stamps are very convenient and easy to manipulate, making a very clear impression. They will not break or mar the pipe or block, as the letters go into the cement gradually. Prices on application. Give lettering wanted.

SIDEWALK MARKERS

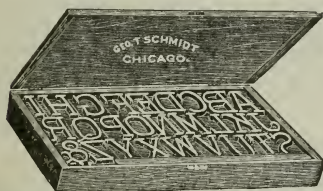
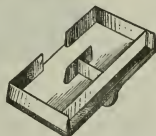


Fig. 932

BRASS OR IRON

For imprinting name of Street into Cement Sidewalks at Street intersections.



Style of Letters

These letters are cut very sharp and deep, thus insuring a good clear impression. In this manner the name of street is imprinted into sidewalk to last indefinitely. The lower edge of each letter is square, forming a guide to print absolutely straight. They are very easily spaced. Each letter has a handle.

Put up in a neat box containing 27 letters, 1 period, 1 comma, 1 dash, 1 straight edge.

COMPLETE SET OF LETTERS

Brass		Iron	
3 1/4 inch	\$9.00	3 1/4 inch	\$7.00
2 inch	7.50	2 inch	6.00
1 1/2 inch	5.00	1 1/2 inch	4.00

COMPLETE SET OF FIGURES

Brass		Iron	
3 1/4 inch	\$3.00	3 1/4 inch	\$2.50
2 inch	2.50	2 inch	2.00
1 1/2 inch	1.75	1 1/2 inch	1.50

WE FURNISH ANY KIND OF BRONZE TABLET OR BRIDGE PLATE TO ORDER

BRONZE NAME PLATES Everlastingly Advertise Your Work



Fig. 933

To imbed into Cement Bridges, Sidewalks, Monuments, etc. Any size or style. Prices on application.

Give size and lettering wanted, also state quantity.

DATERS

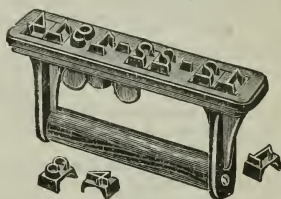


Fig. 934

For Day, Month and Year

Use our new Daters for years to come. Do not make it necessary to buy a new dater every year.

12-24-1915

Specimen of Stamping Done by Our Daters

Complete in neat wooden box\$5.00

This is your first cost. No additional expense.

ADJUSTABLE DATERS

For Year Only

We can also furnish an adjustable dater for year only, which is preferred by many contractors.

This Dater complete with one extra year, price..\$1.00

Extra Dates25



Fig. 935

GEO. B. CARPENTER & CO.

CEMENT SIDEWALK BRANDS, TIME AND TOOL CHECKS, NAME PLATES

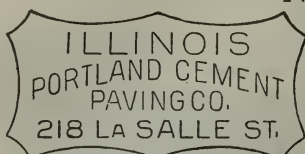


Fig. 1

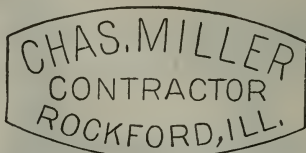


Fig. 2

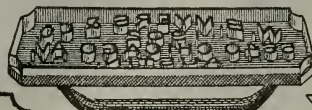


Fig. 3

Size About 4x8

SPECIAL PRICE ON
DUPLICATESPrice on Special Shapes and
Trade Marks on ApplicationAMERICAN
CONCRETE
CONSTRUCTION
COMPANY

Fig. 4

Price Single Brands, 3 lines with border.....\$10.00
 Price Single Brands, 4 lines with border.....12.00

BRANDING IRONS

The letters in this brand are adjustable. Should any one become damaged, it can be replaced without buying a new complete brand.

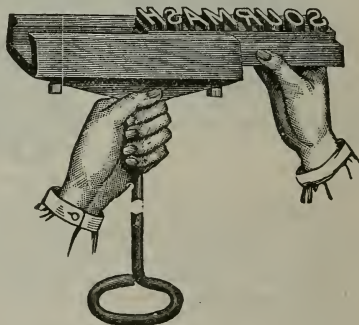
SIZES AND PRICES OF BRANDS

No. of Letters on Brand	¼ inch Letters	⅓ inch Letters	½ inch Letters	¾ inch Letters	1 inch Letters	1½ inch Letters
2	\$0.85	\$0.85	\$0.85	\$1.40	\$1.65	\$1.75
3	1.00	1.00	1.00	1.70	1.85	2.00
4	1.00	1.00	1.00	2.00	2.30	2.50
5	1.15	1.20	1.25	2.50	3.00	3.25
6	1.30	1.40	1.50	2.75	3.20	3.50
7	1.45	1.60	1.75	3.25	3.90	4.25
8	1.60	1.80	2.00	4.00	4.10	4.50
9	1.75	2.00	2.25	4.50	4.80	5.25
10	1.90	2.20	2.50	4.75	5.00	5.50
11	2.05	2.40	2.75	5.00	5.70	6.25
12	2.20	2.60	3.00	5.25	5.90	6.50

EXTRA LETTERS OR FIGURES

¼ in., 8c each. ¾ in., 10c each. ½ in., 10c each.
 ⅓ in., 20c each. 1 in., 25c each. 1½ in., 30c each.

TIME AND TOOL CHECKS IN BRASS OR ALUMINUM With Black Letters



No. 50

We make Brass Name Plates for All
Purposes

Single plate, as shown...each \$1.00

50 Plates as shown..... " 7.00

100 Plates as shown..... " 10.00

Ask for Special Quotations in Larger
Quantities

Fig. 20

In lots of 50.....\$4.00
 In lots of 100..... 6.00

In lots of 50.....\$3.50
 In lots of 100..... 5.00

CARBORUNDUM PRODUCTS

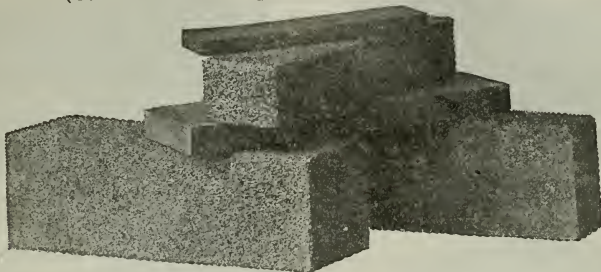
CARBORUNDUM RUBBING BRICKS AND STONES
(Other Carborundum products are listed in the index)

Fig. 210

Under the head of Rubbing Bricks and Stones are manufactured a great variety of different shapes and sizes of stones for dressing and smoothing granite and marble, also for scouring castings, chilled iron and steel rolls used in tin plate mills, rolling mills, etc. These stones are not squared up and dressed, but are packed as they come from the kilns. There is practically no limit to the possibility of manufacture in this line, and while we list a few sizes most commonly used and carried in stock we are prepared to furnish, when called upon, any size or shape of any grit, from the coarsest to the very finest powder. We shall be pleased to quote prices on any plain or irregular shapes. These stones are all made by the vitrified process, and can be used dry or with water or oil. Made in any grit from 20 to FF.

PRICE LIST

No.	Size in inches	List Price per dozen	No.	Size in inches	List Price per dozen
210	8x4x4	\$48.00	215	6x2x1	\$ 6.00
209	8x4x3	36.00	216	6x2x $\frac{1}{2}$	4.20
208	8x4x2	24.00	220	4x4x4	24.00
207	8x3x3	23.80	221	4x3x3	14.40
206	8x3x2	18.00	228	4x3x2	10.80
211	8x2x2	12.60	222	4x2x2	7.80
212	8x2x1	7.80	223	4x2x1	4.80
213	6x3x3	21.60	224	4x2x $\frac{1}{2}$	3.60
205	6x3x2	14.40	226	4x1x $\frac{1}{2}$	2.40
214	6x2x2	10.80	227	4x1x $\frac{1}{4}$	2.40

CARBORUNDUM RUBBING BRICKS FOR CONCRETE WORK

Not Illustrated

For dressing down concrete surfaces, removing form marks, and cleaning moulds and forms. They are fluted for removing form marks, surfacing and general work. They are much more efficient than the pieces of sand stone sometimes used for this work. The flutes give a shear cutting action and allow a clearance for the surplus material removed. Just the right size for hand work. Made in 20 grit.

No. 207. Fluted, 8x3x3 inches.....	per doz.	\$28.80
No. 211. Fluted, 8x2x2 inches.....	"	12.60
No. 214. Fluted, 6x2x2 inches.....	"	10.80
No. 222. Fluted, 4x2x2 inches.....	"	7.80
Fluted, $4\frac{1}{2}$ inch diameter, 2 inches thick.....	"	12.60
Slip, 8 in. long, 4 in. wide, tapered from $1\frac{1}{4}$ to $\frac{1}{2}$ in.....	"	14.40

CARBORUNDUM VALVE GRINDING COMPOUND



Fig. 23

A mixture of Carborundum with a high grade grease, is put up in this containing one, three and five pounds. The compound produces a perfectly clean valve with a true contact seat in less time, with less trouble, than any other medium used, and gives the valve seat a perfectly true, polished surface.

PRICES

1-pound can	\$0.50
3-pound pail	1.25
5-pound pail	2.00

CARBORUNDUM VALVE GRINDING PASTE



Fig. 23A

A conveniently sized package for the automobilist. Consists of a mixture of Carborundum and high grade grease. Will do the same work as the Compound.

Price, per tube.....\$0.50

OIL STONES—RAWHIDE AND COPPER MALLETS

WASHITA MOUNTED



Fig. A398

Size	.....4x1½	5x2	6x2	7x2	8x2
Lily White...					
per doz.	\$9.00	10.00	11.50	13.00	14.00

WASHITA SLIPS



Fig. C398

Lily White Brand, 3 to 5x1¼-2x¾x½ back	Per lb.	
Rosy Red Brand, 3 to 5x1¼-2x¾-½ back		\$0.90
No. 1 Washita, 3 to 5x1¼-2x¾-½ back.		.70
No. 2 Washita, 3 to 5x1¼-2x¾-½ back.		.40

PATENT RAWHIDE MAULS



Fig. A572
These are heavy rawhide mauls made of discs of rawhide, compressed and held together by an iron center, with large head and nut, as shown. When the rawhide is worn out new discs can be inserted.

No.	Weight, lbs.	Each	No.	Weight, lbs.	Each
1	3	\$1.80	4	8	\$2.75
2	4	2.10	5	10	3.00
3	6	2.40	6	12	3.25



SOLID RAWHIDE MALLET

Fig. B572

These are light mallets, made entirely of hide (except the handle) and suited to a variety of uses.

No.	Diameter inches	Length inches	Weight ounces	Price per doz.
0	1	2½	1½	\$ 4.32
2	1¼	2¾	3½	5.52
2	1½	3	6	6.60
3	1¾	3½	7½	7.68
4	2	3¾	10	9.72
5	2¾	4¼	21	21.60
6	2¾	4¾	23	24.36

ARKANSAS MOUNTED



Fig. B398

Size	....3½x1	4x1½	5x2	6x2	7x2	8x2
No. 1 Hard						
per doz.	\$9.00	14.00	24.00	30.00	36.00	40.00

WASHITA OIL STONES



Fig. D398

Lily White Brand, 6 to 8x2x¾-1½.	per lb.	\$0.60
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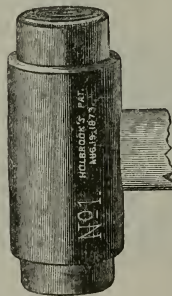


Fig. C572

PATENT HIDE FACED

These hammers are invaluable for machinists, workers in brass or silver, jewelry manufacturers, or for any one who needs to strike a hard blow without bruising the material he is at work upon.

Extra faces are sold for these hammers, and when worn out they can be renewed at a slight cost.

No. 0 has a Shell or Casting of Bronze.

No.	Weight, lbs.	Diam. of Face, in.	Price per doz.	Extra Faces per doz. Pairs
0	½	1	\$10.80	\$3.36
1	1	1¼	12.60	3.60
2	1½	1½	16.00	4.32
3	2	1¾	19.20	5.52
4	4	2	27.84	7.68
5	5½	2¾	39.96	10.92

COPPER HAMMERS

	Weight, lbs.	Each
With Handles	..... ½	\$0.25
With Handles	..... 1	.40
With Handles	..... 1½	.60
With Handles	..... 2	.80
With Handles	..... 2½	1.00
With Handles	..... 3	1.20
With Handles	..... 4	1.40

Fig. D572

HELMETS AND GOGGLES

GAS MASKS

This mask, or helmet, is a simple device which protects from gas and smoke fumes. It contains about 45 cubic feet or a sufficient quantity of air to sustain a person from five to eight minutes; and the manner of obtaining this air is quick and effective. Simply shake (swing) the mask to and fro three or four times and put it quickly over the head. It fits so snugly around the neck that no fume can enter.

It is already in use in fire departments, gas works, mines, storage houses, breweries, ice factories, department stores, hotels, homes, boiler rooms and in many places where one is in danger of being overcome by fumes.

Price, each\$3.50

This mask can also be furnished with air intake to be used in cement mills, cement cars, etc., so it can be worn all day.

Price, each\$3.50

SAFETY HELMET

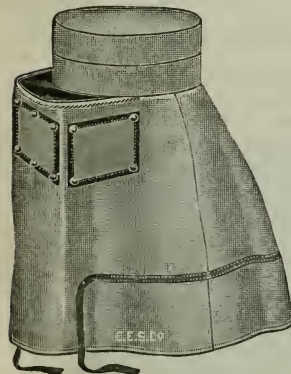


Fig. 701

ing same, Helmet will last indefinitely.

Some prefer the Helmet fitted* with side screens, as this affords the wearer a wide range of vision, and are especially desirable where men are working close together.

No. 700. Fitted with front and side screenseach \$4.50

No. 701. Fitted with front screen only.
Each 4.00

This Helmet has been devised to fill a long-felt want for sand-blasting and kindred use. Gives absolute protection to the face, head and neck.

Made of strong khaki cloth with visor cap of the same material. Helmet is fitted with fine wire mesh screens fastened by means of snap glove-fasteners. These screens are interchangeable; by renew-

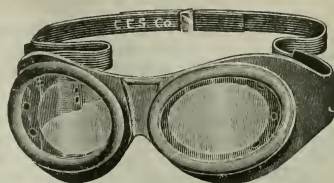


Fig. 101

ALL RUBBER GOGGLES

No. 101. Red rubber curved lenses. Can be had with smoked, blue or amber lenses if desired.....each \$1.00

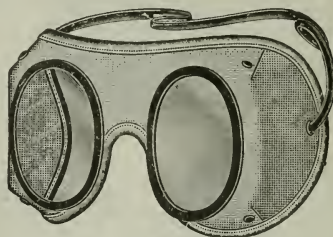


Fig. 24G

CHICAGO GOGGLES

Lenses 1 7/8 inches diameter. The above goggles are made from selected leather formed to fit the face, neatly bound, properly ventilated and fitted with elastic head band. The wire gauze used is 70-mesh Fordner cloth wire, allowing ventilation but not dust. Made in clear lenses only.

Per doz.

No. 24B. Black grained leather, clear lenses \$1.00

No. 24T. Tan leather, clear lenses..... 1.25

No. 24G. Gauze fine wire, clear lenses.. 1.50



Fig. 25

HARVESTER GOGGLE

No. 25. Too well known to need description. Aluminum cups (slanting), glass lenses 1 7/8 inches, set in leather mask; elastic cord for head band.

Price per pair, clear\$0.25

Price per pair, colored35

FOR OTHER SAFETY DEVICES, SEE INDEX

SAFETY DEVICES—COTS AND SPRINGS

COVER'S AUTOMATIC RUBBER RESPIRATOR



Fig. 662A

Has a perfect filter device, large capacity, and will keep out dust, smoke, fumes and gases. It is made of soft white rubber and is easily kept clean.

Each \$2.00

G. B. C. & Co. same style as above 1.00

COVER'S GAS TIGHT RUBBER GOGGLES



Fig. 662B

Are made of a single piece of pure gum rubber; fit anybody air tight, and are worn with the respirator when desired.

Each \$1.50

CANVAS GLOVES

Style No. 500. Without Gauntlet

Gray, 8 oz., plain band; same style made in all weights in white.....per doz. \$1.10

Style No. 210. With Gauntlet

Heavy 10 oz. flannel, all cotton gauntlet....per doz. \$2.20

Made also in the 8 oz., same as above.....per doz. 2.10

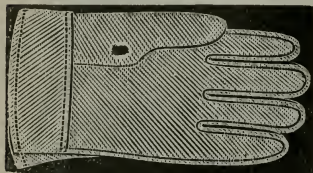


Fig. 500



Fig. 77

SANITARY CUSPIDORS

With Removable Covers, for Factories, Garages and Workshops

To comply with the law requiring factories and workshops to have suitable receptacles for expectoration, the Boards of Health in various cities and towns, in compliance with this act, are adopting rules requiring manufacturing plants and workshops to use Cuspidors.

No. 1. 11½ in. diameter x 3½ in. deep.....each \$0.70

No. 2. 9½ in. diameter x 4 in. deep..... " .60

Easy to clean, heavy steel, galvanized, will not chip, or rust as enameled ware does.

These cuspidors are approved by various Boards of Health.

UNION DOUBLE-DECK COT

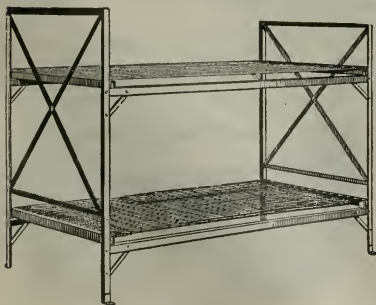


Fig. 1216

Made of 1¼ in. angle iron. Height of lower spring from floor 12 inches. Height of upper spring from floor 42 inches. Extreme height end posts 52 inches.

Width 2½ ft., length 73 in., weight 115 lbs.each \$12.00

Width 3 ft., length 73 in., weight 125 lbs.each 13.00

WOVEN WIRE SPRINGS

Seasoned Maple Frame. Hard Oil Finish. Steel Corner Plates.

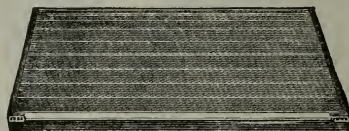


Fig. 101

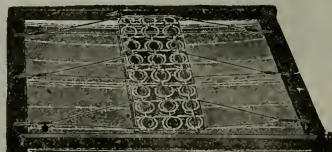


Fig. 101-31. Re-enforced

No. 101. 3 ft. wide x 5 ft. 6 in. long...\$2.30

No. 101. 4 ft. 4 in. wide x 5 ft. 6 in. long 2.50

No. 101-31 3 ft. wide x 5 ft. 6 in. long... 3.30

No. 101-31. 4 ft. 4 in. wide x 5 ft. 6 in. long 3.50

Other sizes on application.

FOR OTHER STYLES OF GOGGLES, SEE INDEX

WATCH-CLOCKS

NEWMAN GRILLE WATCH-CLOCKS

"A Positive Check on Human Fallibility"

Approved by the National Fire Protection Association for use under the rules and requirements of the National Board of Fire Underwriters and by all Mutuals.

Endorsed by the U. S. Government

Records from Newman Grille Clocks assure that patrolmen have not neglected their beats in

U. S. Life Saving Service where constant alertness must be assured.

West Point Military Academy where efficiency is a first consideration.

Sandy Hook Proving Grounds where intrusion must not be permitted.

Interstate Commerce and Panama Canal Commissions, Post Office and Treasury Departments where tamper-proof evidence of faithful safe-guarding is demanded.

U. S. Naval Observatory where the nation's time is established.

The Pennsylvania Railroad is the world's largest user of watchman's clocks. They have ordered in the past few years, over \$30,000 worth of the Newman Grille Watch-Clocks.

One of the first essentials to reduce fire and accident hazard is a watchman's clock, which faithfully records the regularity of the watchman in making his hourly rounds during nights, Sundays, holidays and at such other times as premises are not occupied or in operation. Insurance companies endorse such an installation by granting a rate reduction which goes a long way toward paying for the clock.

The keys of these clocks are fastened and sealed at the various stations so that they cannot be removed without detection.

The clock itself is locked while in possession of the watchman and equipped with a pricking device which registers on the paper dial every opening and closing and the exact time at which the opening and closing take place. By keeping the locking and winding keys and the supply of used and unused dials inaccessible to the watchman, he cannot open the clock or otherwise examine or tamper with his records, without being detected. The user of a spurious key can never know the result of his attempts, yet each is recorded upon the paper dial and will be discovered on the following morning.

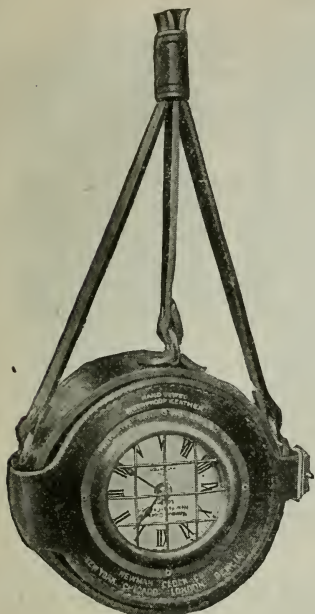


Fig. 605A

The paper dials are usually arranged for twenty-four hours to provide a record for Sunday and holiday registering, without any one having to go to the plant on those days to change the dials. 12 hour dials may be had if desired. Registration on the same dial for two nights is made possible by the watchman starting his rounds on the half hour on the second night instead of on the even hour as on other nights.

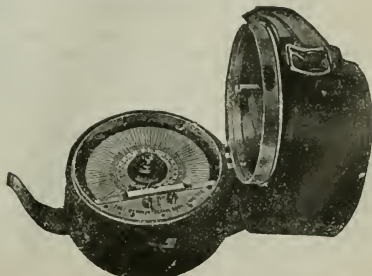
PRICES ON COMPLETE OUTFITS

Including watch-clock, pouch with carrying strap, standard patrol boxes with marking keys attached, patrol box seals and 375 (one year's supply) dials.

6 station outfit, complete.....	\$63.25	25 station outfit, complete.....	\$85.00
9 station outfit, complete.....	66.00	35 station outfit, complete.....	102.50
12 station outfit, complete.....	68.75	Additional station keys \$2.00 each, including key box.	
16 station outfit, complete.....	71.00		
Additional station keys \$1.75 each, including key box.			



Patrol Box with Lid Raised to Show Method of Attaching Key and of Attaching the Box to its Support



The Newman Clock Open in Grille Pouch

FIRST AID CABINETS

FIRST AID IN ACCIDENTS

Thirty states have enacted laws making a First Aid Cabinet mandatory in certain industries.

By installing a First Aid Cabinet you can get a merit rating with the companies who carry your compensation insurance, all of whom are recommending first aid, everywhere. What you save this way will more than pay for your first aid cabinets.

The necessity for prompt aid in accidents or injury needs no argument. Be as careful as we like, a certain number of accidents take place in all occupations, and it is not only our duty to help them but also to lessen and mitigate as much as lies in our power the suffering and bad effects of those which do occur. If there is one fact more recognized than another it is this—that the immediate treatment in the case of any

injured person has a positive influence and a most important bearing upon the subsequent progress of the case. The interval which elapses between the occurrence of the accident and the arrival of medical aid or the transference of the injured to a hospital is fraught with much moment to the unfortunate sufferer. As in the case of fire, the first five minutes are most important either in an accident or sudden illness. It is possible that the right thing may be done but it is just as likely that proper aid may not be applied and serious harm may follow or a valuable life may be lost.

JOHNSON'S FIRST AID CABINET No. 1

In several states Johnson's First Aid Cabinet No. 1 has been specified by many of the municipalities. It has been adopted by several of our chief railroad systems as a shop first aid equipment.

The dimensions of this Cabinet are: Length, 20 inches; width, 13 inches; depth, $3\frac{1}{2}$ inches; weight, 12 pounds. The Cabinet is made of heavy decorated japanned metal, with strong hinges and fasteners, hangers to hang Cabinet against the wall, and convenient handles for carrying. It is in every respect a portable and substantial container. The interior is partitioned and the contents packed that they are kept in good order and are readily accessible. Simple directions for the use of the various articles are printed upon the inside of the cover; and in each Cabinet a Johnson's First Aid Manual is enclosed giving explicit directions for the treatment of injuries before the arrival of the surgeon.

CONTENTS OF JOHNSON'S FIRST AID CABINET No. 1

Two Johnson's "First Aid for Wounds" Packets, No. 3.
Two ounces Red Cross Absorbent Lint.
Two Burn Dressing Packets, No. 22.
Four packages Red Cross Absorbent Gauze, each containing one yard.
Two packages Red Cross Absorbent Cotton, each containing four ounces.
One spool Johnson's "Z O" Adhesive Plaster, 1 inch wide, 5 yards long.
Six Red Cross Cotton Roller Bandages, 2 inches wide.
Six Red Cross Cotton Roller Bandages, $2\frac{1}{2}$ inches wide.
Four Linton Gauze Bandages, 1 inch wide.
Eight Linton Gauze Bandages, 2 inches wide.
Six Linton Gauze Bandages, $2\frac{1}{2}$ inches wide.
One Tourniquet.
One jar Carbolyzed Petrolatum.
One bottle for Camphenol Antiseptic Solution. One bottle Camphenol.
One bottle Aromatic Spirits of Ammonia.
Four Wooden Splints, $3\frac{1}{4} \times 18$ inches.
Two packages Safety Pins. One pair Scissors. One pair Tweezers.
One sample Synol Soap.
One Johnson's First Aid Manual.
One Triangular Bandage Hanger.

The Cabinet also has a supply of Accident Report blanks for use in reporting accidents to the superintendent or other authority, blanks for checking supplies and ordering refills and an illustrated chart showing uses of triangular bandage, etc.

List price complete each \$12.00

WOOD'S EMERGENCY CASE No. 6

Size $7 \times 9 \times 2\frac{1}{2}$ inches

This case is designed for camp, automobile, launch, home or small shop, where a compact and convenient accident outfit is desired. The case is black japanned metal, hinged cover with fastener.

Two First Help for Wounds Packets.

Two yards Red Cross Gauze.

One ounce cotton.

Four gauze bandages.

Two cotton bandages, assorted.

One spool "Z O" Adhesive Plaster.

One tube Carbolyzed petrolatum for burns and scalds.

One tourniquet, to stop hemorrhage.

One pair scissors.

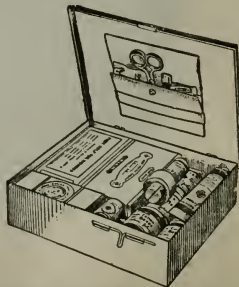
One pair tweezers.

Safety pins.

One sample Synol Soap.

One sample Toilet and Baby Powder.

Handbook of First Aid.



List price complete each \$6.00 Wood's Emergency Case No. 6

LANTERNS



Fig. 37
"D-LITE"

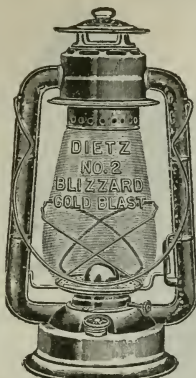


Fig. 41
"BLIZZARD"



Fig. 35
"WIZARD"



Fig. 15
"MONARCH"

Fig. 37 "D-LITE" LANTERN
(Cold Blast)

The Dietz "D-Lite" Lantern, was the first in the field of the now numerous "Short Globe" Lanterns. The "D-Lite" is short and compact. A lift at the top operates the telescoping dome. The globe, globe seat and burner cone hinge back, leaving the wick exposed for cleaning, trimming and lighting. Minor features include patent reinforced tubes, large oil filler, security standing bail hooked into patent brass eyelets, etc.

Furnished in bright tin, bright tin with polished brass fount and dome, complete with globes.

SPECIFICATIONS

Height over all.....	13 3/4 inches	Fount capacity—hours.....	20 hours
Volume of light by test.....	10 candle power	Name of globe (white, ruby, blue and green).....	Dietz "D-Lite"
Size of wick.....	1 inch	Tinned steel burner.....	No. 282
Burner.....	Number 2	Quantity packed in one case.....	One-half dozen
List per dozen.....		\$16.00	

Fig. 41 No. 2 "BLIZZARD" LANTERN
(Cold Blast)

The No. 2 Blizzard Lantern gives a light of ten candle power. It is the most popular "Cold Blast" Lantern of its type on the market and embodies every good technical lantern feature, reinforced tubes, globe lift inside of frame, dome-shaped solderless oil fount with large oil filler, security standing bail hooked into patent brass eyelets, etc.

The No. 2 "Blizzard" is equipped with the new Dietz winglock burner with rising cone, the cone being an integral part of the globe-plate. Attention is called to the facility with which the exposed wick may be cleaned, trimmed and lighted.

Furnished in bright tin and bright tin with polished brass. Fount and top complete with globes.

SPECIFICATIONS

Height over all.....	14 3/4 inches	Name of globe (white, ruby, blue and green).....	Dietz "Blizzard"
Volume of light by test.....	10 candle power	Patented tinned steel burner.....	No. 272
Size of wick.....	1 inch	Quantity packed in one case.....	Half dozen
Oil used.....	150° kerosene	List price per dozen.....	\$11.25
Fount capacity—hours.....	20 hours		

Fig. 35 "WIZARD"
"King of 'Cold Blast' Lanterns"

The latest model of the new type of Lantern with exposed wick and new and convenient short globe.

This Lantern comes close to perfection. It has a dome shaped solderless oil fount with large oil filler, patent reinforced tubes and security standing bail hooked into patent brass eyelets. The wick is exposed for easy cleaning trimming and lighting. Burns perfectly with a light of 10 candle power.

Furnished in bright tin.

SPECIFICATIONS

Height over all.....	13 3/4 inches	Fount capacity—hours.....	20 hours
Volume of light by test.....	10 candle power	Name of globe (white, ruby, blue and green).....	Dietz "Wizard"
Size of wick.....	1 inch	Patented tinned steel burner.....	No. 272
Burner.....	Number 2	Quantity packed in one case.....	One dozen
List per dozen.....		\$15.50	

Fig. 15 "MONARCH" LANTERN
(Hot Blast)

Has all the latest improvements, including positive-locking globe lift, patent safety winglock burner, dome shaped solderless oil fount with large oil filler, reinforced tubes and security standing bail hooked into patent brass eyelets. Furnished only in bright tin complete with globe.

SPECIFICATIONS

Height over all.....	13 3/4 inches	Fount capacity—hours.....	18 hours
Volume of light by test.....	4 candle power	Name of globe (white, ruby, blue and green).....	Dietz Fitzall
Size of wick.....	3/4 inch	Patented tinned steel burner.....	No. 411
Oil used.....	150° kerosene	Quantity packed in one case.....	One dozen
Burner.....	Number 1		
List per dozen.....		\$8.00	

LANTERNS



Fig. 91
Vesta R. R.



Fig. 9
Little Star
No. 91 NEW "VESTA" R. R. LANTERN
(Cold Blast)

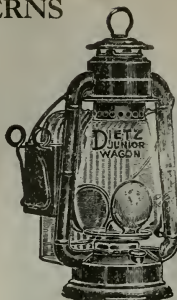


Fig. 47
Junior Wagon

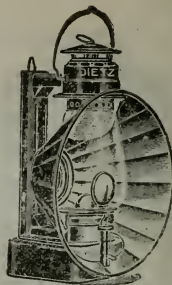


Fig. 60
Beacon

It gives three times the light of the Signal Oil Railroad Lantern, and saves its cost in a short time through employing kerosene in place of expensive signal oil. Simple in construction, easily cleaned and filled, dependable, and makes all signals. Is the only railroad lantern of the "tubular" type made, and is giving satisfaction on many railroads, subways, river tunnels, etc., and for general lantern purposes.

The "Vesta" type has been the U. S. Government Standard for army and navy use for many years. Furnished only in bright tin and polished brass, complete with globes.

SPECIFICATIONS

Height over all.....	11 inches	Fount capacity—hours.....	16 hours
Volume of light by test.....	3 candle power	Name of globe (white, ruby, blue or green).....	Dietz "Vesta"
Size of wick.....	¾ inch	Patented burners.....	No. 500
Burner.....	No. 2	Quantity packed in one case.....	One dozen
List per dozen.....			\$25.00

No. 9 "LITTLE STAR" LANTERN
(Hot Blast)

It has the security standing ball hooked into patent brass eyelets, patent safety winglock burner, positive-locking globe lift and dome shaped solderless oil fount.

The "Little Star" is the biggest lantern value for the money on the market. Furnished only in bright tin, complete with globe.

SPECIFICATIONS

Height over all.....	11 inches	Fount capacity—hours.....	13 hours
Volume of light by test.....	3 candle power	Name of globe (white, ruby, blue and green).....	Dietz "U. S."
Size of wick.....	¾ inch	Patented burners.....	No. 411
Burner.....	No. 1	Quantity packed in one case.....	One dozen
List per dozen.....			\$7.50

No. 47 "JUNIOR" WAGON LAMP
With 2¼ Inch Ruby Rear Lens
(Cold Blast)

Designed to meet the requirements of the State and City laws regulating night lights on horse-drawn vehicles. It has been improved by adding a clip-spring holder in addition to the combination socket taking a round or flat bracket. The lamp is carried on the side of the vehicle, lighting the road ahead and at the same time showing a red danger signal to the rear.

Has a bright corrugated tin reflector and a magnifying bullseye lens in front of flame; also a 2¼ inch ruby rear lens together with all the latest cold blast lantern improvements.

Furnished only in black enamel with flat bracket and complete with globe. Specify for right or left hand.

SPECIFICATIONS

Height over all.....	12 inches	Name of globe.....	Dietz "Junior"
Reflected light by test.....	10 candle power	Patented tinted steel burner.....	No. 201
Size of wick.....	¾ inch	Size of magnifying bullseye lens.....	2¼ inches
Burner.....	Number 1	Size of ruby rear lens.....	2¼ inches
Fount capacity—hours.....	13 hours	Quantity packed in one case.....	Half dozen
List per dozen.....			\$17.50

No. 60 "BEACON LIGHTS"
Two Sizes—Nos. 30 and 60
(Cold Blast)

"Beacon Lights" are useful wherever a strong, reflected light is required. They may be filled, lighted and regulated without removing the globe. The No. 60 size has a 5 inch reflector. No. 30 is the popular size.

These lamps are not adaptable as hand lanterns or vehicle lights. Furnished only in green enamel, complete with globe.

SPECIFICATIONS

	No. 30 Size	No. 60 Size
Height over all.....	15¼ inches	20½ inches
Reflected light by test.....	60 candle power	100 candle power
Size of wick.....	1 inch	1½ inches
Size burner.....	Number 1	Number 2
Fount capacity—hours.....	35 hours	20 hours
Name of globe (white only).....	Dietz "Blizzard"	Dietz No. 2 Tubular
Patent tinted steel burner.....	No. 262	No. 323
Size of bullseye lens (No. 30 only).....	2¼ inches	
Size of reflector (No. 60 only).....		5 inches
Quantity packed in one case.....	Half dozen	One only
List price each.....	\$1.65	\$1.50

SUBMIT YOUR LIGHTING PROBLEMS TO US. WE ARE EXPERTS IN THIS LINE

LAMPS

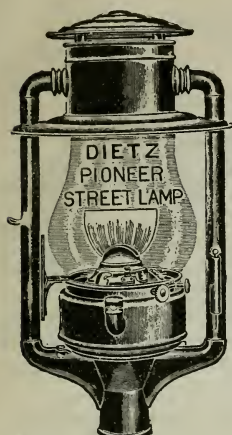


Fig. 71

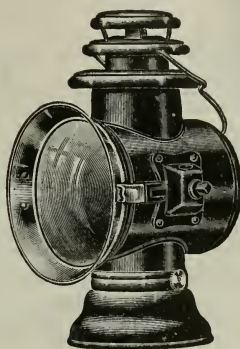


Fig. 53



Fig. 77

Fig. 71 "PIONEER" STREET AND PLATFORM LAMP
(Cold Blast)

For Post or Bracket

Has been on the market for more than 30 years. The original of all globe tubular street and platform lamps. Requires no chimney and gives a steady light double that of an ordinary gas street lamp and at much less cost. It may be filled, lighted and regulated without removing the globe. Has a self-extinguishing device that may be set to burn for a certain number of hours.

For years the "Pioneer" has been the standard of the U. S. Government and many railway systems. It is much used for village lighting.

Furnished in green enamel, same with brass or glass fount, and all brass, green enamel, complete with globes.

SPECIFICATIONS

Height over all.....	25½ inches
Volume of light by test.....	22 candle power
Size of wick.....	1½ inches
Burner.....	Number 3
Fount capacity—hours.....	24 hours

Name of globe (white, ruby, blue and green).....	Dietz "Pioneer"
Patented tinned steel burner.....	No. 313
Size of post socket opening.....	2¼ inches
Quantity packed in one case.....	One or two
List each.....	\$6.50

Fig. 53 "OCTO" DRIVING LAMP
With 2¼ inch Ruby Rear Lens
(Cold Blast)

Made of cold rolled steel.

Complies with night-driving laws and will not jar or blow out. Fastens to the dash with a dash clamp holder, and a finger prop holder may be had for attaching it to the side of a carriage. It may be carried about as a hand lamp.

Furnished only in black enamel with nickel plated door rim, packed with dash clamp holder.

Has both right and left hand holder sockets.

SPECIFICATIONS

Height over all.....	21¼ inches
Reflected light by test.....	30 candle power
Size of wick.....	¾ inch
Oil used.....	150° kerosene
Fount capacity—hours.....	10 hours

Nickel plated brass burner.....	No. 510
Size of door lens.....	4¼ inches
Size of ruby rear lens.....	2¼ inches
Quantity packed in one case.....	Half dozen
List price each.....	\$4.00

Fig. 77 "PIONEER" HANGING LAMP
(Cold Blast)

The same as the "Pioneer" street and platform lamp except that in place of the post socket it has a stamped base. It also has a ball. It may be filled, lighted and regulated without removing the globe, and has a self-extinguishing device which may be set to burn for a certain number of hours.

Furnished in green enamel, and with brass or glass fount complete with globe.

SPECIFICATIONS

Height over all.....	21¼ inches
Volume of light by test.....	22 candle power
Size of wick.....	1½ inches
Burner.....	Number 3
Fount capacity—hours.....	24 hours

Name of globe (white, ruby, blue and green).....	Dietz "Pioneer"
Patented tinned steel burner.....	No. 313
Quantity packed in one case.....	One
List each.....	\$7.50

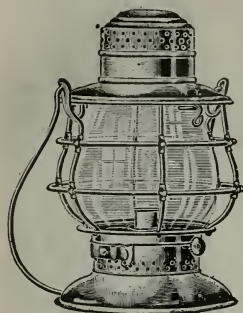
WE CARRY A COMPLETE STOCK OF LIGHTING EQUIPMENT.

RAILROAD LANTERN—LANTERN GLOBES

IMPROVED "STEEL CLAD" R. R. LANTERN

(No. 39 PATTERN)

With Outside Wick Raiser



The **IMPROVED "STEEL CLAD"** Railroad Lantern is made with flat steel upright guards and skeleton base. It is a giant in strength and very compact. It will outlast three ordinary railroad lanterns.

The **"Steel Clad"** is equipped with a newly patented winglock burner which fits into a slip collar and rests on a fibre washer permanently secured to the fount. A short turn of the wrist securely locks the burner to same. The oil fount is held securely to the frame by a patented automatic retaining spring, which permits the fount being removed with one hand. The fount is provided with a safety oil well.

While our New No. 39 Vulcan Globe with square shoulder on top and bottom is furnished with all our No. 39 Railroad Lanterns, any regular 39 globe will fit all No. 39 frames. Can furnish with wire guard if desired.

Furnished in bright tin, with or without globe.

SPECIFICATIONS

Height Over All.....	10 Inches
Volume of Light by Test.....	2 C. Power
Size of Wick.....	1 Inch
Oil Used.....	"Signal"
Fount Capacity—Hours.....	24 Hours

List price.....

Name of Globe (White, Ruby, Blue and Green).....	"Vulcan" (No. 39)
*Regular Burner.....	No. 2 "Winglock" Rat.
Quantity Packed in Cases for Jobbing Trade.....	1 Dozen
.....	per doz. \$17.50

*For Kerosene, Substitute No. 1 "Winglock" Convex Burner.

LANTERN GLOBES

Selected Best Quality



Fig. 136
"BLIZZARD" GLOBE
6½ in. High
Top 2½ in. Wide
Bottom 3½ in. Wide



Fig. 136A
"U. S." GLOBE
5½ in. High
Top 2½ in. Wide
Bottom 2½ in. Wide



Fig. 136B
"JUNIOR" GLOBE
5½ in. High
Top 2½ in. Wide
Bottom 2½ in. Wide



Fig. 136C
"FITZALL" GLOBE
6½ in. High
Top 2½ in. Wide
Bottom 3½ in. Wide

Globes as Regularly Supplied in Lanterns. Ground Evenly on Top and Bottom

"U. S." GLOBES: (White, ruby) for "Little Star" and "U. S." Lanterns.....	White	Ruby
"JUNIOR" GLOBES: (White, ruby) for "Junior" Lanterns, "Junior" Wagon Lamps, and Style C "Night Drivers' Friend" Lamps.....	\$1.20	\$4.00
	1.20	4.00

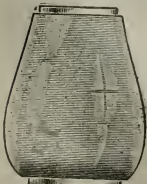


Fig. 136D
"VULCAN"
(No. 39) GLOBE
4½ in. High
Top 2½ in. Wide
Bottom 3½ in. Wide

"FITZALL" GLOBES: (White, ruby) for "Hy-lo," "Victor," "Monarch," "O. K.," "Crystal," "Iron-clad" and "Royal" Lanterns, "Buckeye" and "Beacon" Dash Lamps, "Victor" Wagon Lamps, "King" Fire Department Lanterns, "Underwriters'" Mill Lanterns, "No. 15" Side Lamps, "A No. ONE" Lanterns, "Acme" Inspectors' Lamps, "Protector" Trackwalkers' Lamps, No. 26 Warning Lamps. Also any other make of White Ruby Hot Blast Lanterns.....

List per dozen
White Ruby
\$1.20 \$4.00

"BLIZZARD" GLOBES: (White, ruby) for No. 2 "Crescent," No. 2 "Blizzard," and Special No. 2 "Blizzard" Lanterns, No. 2 "Blizzard" Dash Lamps, No. 2 "Blizzard" Mill Lanterns.....

1.40 4.50

Railroad No. 39 Globes.....

1.60 5.00

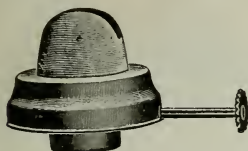
"D-LITE" GLOBES: (White, ruby) for "D-Lite" and "Wizard" Lanterns and No. 2 "Wizard" Wagon Lamps.....

1.20 4.00

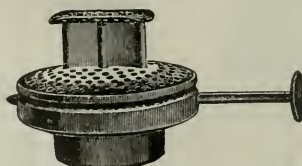


Fig. 136E
"D-LITE" GLOBE
4½ in. High
Top 4 in. Wide
Bottom 3½ in. Wide

LANTERN BURNERS AND WICKS



Dietz No. 201



Dietz No. 252

LANTERN BURNERS

In ordering always advise what lantern you want the burners for.

The burner is the most important Lantern part.

The lantern burners listed below are of the most advanced type. They are more substantial than brass burners, do not heat so readily, produce a whiter flame and have longer life.

The different numbers listed below are not all the burners we carry in stock. We can furnish burners for any lamp you may have.

List prices are not shown here, as they depend largely upon the costs of materials entering into the manufacture of the burners. We will quote the lowest prices upon receipt of your inquiry.

TINNED STEEL BURNERS

HOT BLAST TYPE FOR USE WITH KEROSENE

Dietz No. 401 Burner: (Plain cone—no catch) $\frac{5}{8}$ inch wick. Can be used in place of regular burner on "Monarch," "Iron Clad," "Crystal," "Underwriter's" Mill and "King" Fire Department Lanterns.

Dietz No. 411 Burner: (Winglock cone) $\frac{5}{8}$ inch wick. Used on "Little Star," "Victor" and "Monarch" Lanterns, "Buckeye" Dash Lamps and "Victor" Wagon Lamps.

Dietz No. 421 Burner: (Hinge cone) $\frac{5}{8}$ inch wick. Used on "Hy-lo," "Crystal," "Iron Clad," "King" Fire Department and "Underwriter's" Mill Lanterns.

Dietz No. 431 Burner: (Rising Cone) $\frac{5}{8}$ inch wick. Used on "O. K." Lanterns.

Dietz No. 462 Burner: (Winglock cone) 1 inch wick. Used on No. 2 "Royal" Lanterns.

COLD BLAST TYPE FOR USE WITH KEROSENE

Dietz No. 201 Burner: (Winglock cone) $\frac{5}{8}$ inch wick. Used on "Junior" Lanterns, and "Junior" Wagon Lamps.

Dietz No. 211 Burner: (Rising cone) $\frac{5}{8}$ inch wick. Used on "Little Wizard" Lanterns and "Ideal" Inspectors' Lamps.

Dietz No. 221 Burner: (Slotted cone) $\frac{5}{8}$ inch wick. Used on No 15 Side Lamps.

Dietz No. 252 Burner: (Slotted cone) 1 inch wick. Used on No. 2 "Blizzard" Mill Lanterns.

Dietz No. 262 Burner: (Winglock cone) 1 inch wick. Used on No. 30 "Beacon Lights."

Dietz No. 272 Burner: (Rising cone) 1 inch wick. Used on No. 2 "Blizzard," Special No. 2 "Blizzard" and "Wizard" Lanterns, No. 2 "Blizzard" Dash Lamps and No. 2 "Wizard" Wagon Lamps.

Dietz No. 282 Burner: (Rising cone) 1 inch wick. Used on "D-Lite" Lanterns.

LANTERN AND LAMP WICKS

No. 0.	Width, $\frac{3}{8}$ inch	Price per gross	\$0.40; price per doz.	\$0.05
No. 1.	Width, $\frac{5}{8}$ inch	Price per gross	.56; price per doz.	.08
No. 2.	Width, 1 inch	Price per gross	.80; price per doz.	.10
No. 3.	Width, $1\frac{1}{2}$ inch	Price per gross	1.28; price per doz.	.15

REFLECTORS

SILVERED GLASS

Size inches	5	6	7	8	10	12
Price per doz..	\$1.90	2.00	2.40	2.80	3.70	5.00

FLAT CORRUGATED, SILVERED GLASS REFLECTORS

Price per Dozen

For No. 2 Government and Bow Lamp. . .	\$ 7.00
For Wings of No. 2 Bow Lamp	7.00
For No. 4 Tubular Triangular Lamp	10.00

FOR TORCH BURNERS AND WICKS, SEE INDEX

GASOLINE LAMPS AND TORCHES

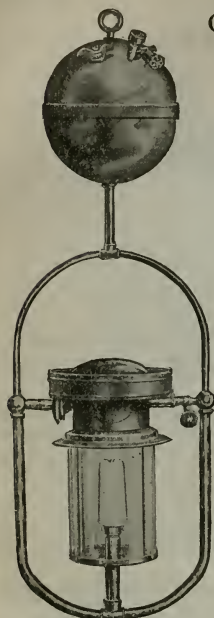


Fig. 2B

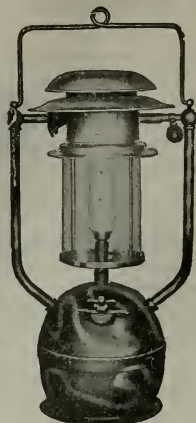


Fig. 25

**"B & W" 1-MANTLE BEACON
No. 2-B**

Exactly the same lamp as No. 25 except that the tank is overhead so as to avoid making a shadow under the lamp. This lamp is especially recommended for contractors. Can be strung on a wire, above the heads of workmen, and out of their way. Hangs with tackle or pole. Mica chimney. Price, complete\$16.00



Fig. 446

"B & W" PRESSURE LAMP No. 25

The handiest light ever invented. Hangs like an arc, sets down like a lamp, carries like a lantern. Useful in or out of doors; gives as much light as an electric arc for half a cent an hour. Weather-proof, simple, safe and absolutely satisfactory. Mica chimney and shipping box. Pressure automatically kept up until empty.

One thousand candle-power. Consumes one gallon of gasoline in twenty-four hours. Shipping weight, 18 pounds.

Price\$12.50
14 foot iron pole and tackle.....6.00

WALL OR BANJO TORCHES

These Wall Torches are well made, strong, durable and reliable in every particular, and their light is large, clear and bright. The wind will not put out the flame, and rain, cold or heat does not affect it.

The tank is finished in hard baked japan. Pipe is black japanned and runs through tank from bottom to top where it is securely fastened. A connecting joint in pipe just below tank simplifies packing which proves a convenience in shipping. The globe valve and generating burner are made of brass.

PRICE LIST WALL OR BANJO TORCHES FOR GASOLINE OR COAL OIL

Single burnerper doz. \$24.00 | Double burnerper doz. \$42.00
Can furnish galvanized at additional price. In ordering state if wanted for gasoline or coal oil.

THE STORM KING LANTERN

200 CANDLE-POWER

Fifteen Hours on One Quart of Gasoline

The Storm King Lantern is intended to supply the need of a strong, unwavering, safe and convenient, portable outdoor lamp or lantern, for the use of farmers, planters, dairymen, stockmen, contractors, watchmen and merchants, and for lighting street shows and fairs, circuses, carnivals, docks, quays, ships, motorboats, railroad yards, freight sheds and way stations. In fact, the field for the sale of the Storm King is almost unlimited and it "fills the bill" in every case and gives entire satisfaction.

It only weighs 3½ lbs. net and is 14 inches high, 6 inches in diameter, therefore, it is about the same size and weight as the ordinary lantern, but the light produced is 20 to 30 times as great.

If it is dropped from a great height or thrown on the ground with sufficient force to break the fount, the light is extinguished instantly and before the flame can ignite the gasoline escaping from the fount.

It is guaranteed for five years by the oldest, largest and most reliable manufacturer of gasoline lighting devices.

Price, complete\$6.50

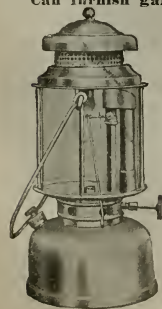


Fig. 200C

GASOLINE FLOOD LIGHTS

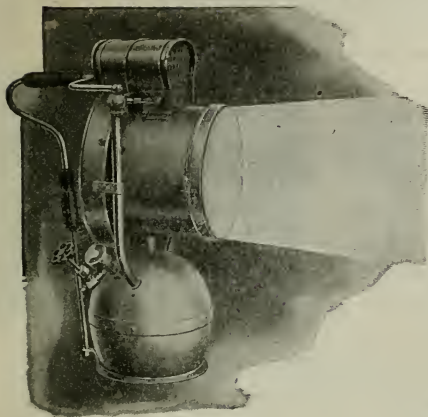


Fig. 77

"B & W" No. 77 HAND SEARCHLIGHT

This is an ideal light for construction work where a lot of light is to be thrown on one spot. Particularly adapted for trench digging, well sinking, etc., or any similar purpose. Carries like a lantern, sets down like a lamp and hangs like an arc.

Five thousand candle power. Height 2 feet, weight 30 pounds. Polished brass. Absolutely weatherproof. Throws a beam 50 feet wide and 300 feet long.

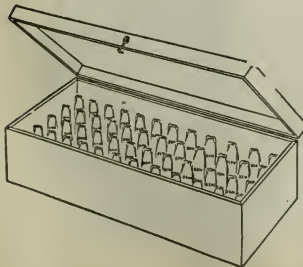
Price, complete.....\$50.00

"B & W" PORTABLE FLOOD LIGHT No 99

The most powerful portable flood-light on earth. Especially useful for lighting large areas. Used to light all the big automobile races. An excellent light for tearing down and wrecking buildings. Absolutely weatherproof. Light all thrown in one direction. Ships in two pieces.

Twelve thousand candle power. Rays cover an area 250x400 feet. Consumes one gallon of gasoline in six hours. Shipping weight, 80 pounds. Height, 3½ feet.

Price, complete.....\$100.00



"B & W" MANTLE BOX

This box will store and carry used mantles safely, and will save you a considerable expense. It is substantially built of wood and has a handle and latch.

12 mantle size.....	\$2.00
24 mantle size.....	3.00
48 mantle size.....	4.00
Extra Mantles, each.....	.25



Fig. 99

BUCKEYE CARBIDE FLARE LIGHTS

For Contractors and Railroads



Size No. 4C

Adjustable Burners varying from 2000 to 12,000 Candle Power can be supplied without extra charge.

We strongly recommend the standard sizes as listed; they are more efficient and less liable to get out of order.

PRICES AND SIZES

Size 2A. 1000 Candle Power.

Price\$50.00

Size 2C. Either 3000 or 5000 Candle Power. Single Cylinder 6 hours with extra Cylinder 12 hours.

Price, with one Cylinder.....\$50.00

Price, with extra Cylinder..... 60.00

Size 3C. 5000 Candle Power. We sell more of this size than all other sizes combined.

Price\$70.00

Size 4C. 10,000 Candle Power.

Price\$110.00

Type S. For Wrecking Cranes, Steam Shovels, etc.

Size 3S. 5000 Candle Power. Includes Generator, 25 feet Armored Hose, Burner, Reflector and fittings.

Price\$96.00

Size 4S. 10,000 Candle Power. Same as Size 3S except with Double Generator and 2 Reflectors.

Price\$140.00



BUCKEYE CARBIDE LAMP

FIREMAN AND BUILDER'S PATTERN



Adapted for
Fire Departments
Tunnels
and
General
Building
Operations

Gives 500 Candle Power 10 hours or 4000 Candle Power 1½ hours. Size of Generator, 7x14 inches.

Price\$25.00

Valuable also in Mines, Docks, Shop Use, Inspectors' Work, etc.



236

THE CHALLENGE CARBIDE FLARE LIGHT



Will Use Either Cake or Regular Commercial Carbide

2000 Candle Power for 2 cents per hour.

Cost of operating is only one-half that of Lights using Coke Carbide.

Reflector is Aluminum and can be swung to any angle.

Has no intricate parts and is easy to handle.

Is built heavier and stronger than most flares.

Price\$30.00

It is as fool-proof as it is possible to make a portable light.

For Carbide, see Index

MILBURN LIGHTS



Fig. 2405YH
No. 3X
15,000 Candle Power



Fig. 2404Z
No. 2
5,000 Candle Power

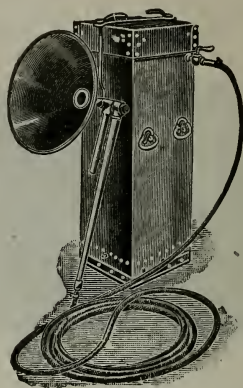


Fig. 2406XG
No. 3W
15,000 Candle Power

These lights are used by contractors, railroads, building constructors, mines, quarries, industrial plants, etc. They burn more than half air, are smokeless and incandescent. The flame can be regulated from the maximum light to a needle point. They light instantly and require no attention during use. They use ordinary commercial carbide and are the most economical source of high-power illumination on the market.

SPECIFICATIONS

	No. 3X	No. 2	No. 3W
Height	6 ft.	5 ft.	38 in.
Tank	12x12x36 in.	10x10x30 in.	12x12x36 in.
Reflector	15 in.	12 in.	15 in.
Weight, empty	90 lbs.	50 lbs.	100 lbs.
Weight, packed	121 lbs.	75 lbs.	140 lbs.
Carbide charge	16 lbs.	9 lbs.	16 lbs.
Burning capacity	9 to 18 hours.	6 to 12 hours.	9 hrs.
Operating cost	4 to 6c per hour.	3 to 5c per hour.	4 to 6c per hour.

PRICES

No. 3X. Complete, with one cylinder for 9 hours burning capacity.....	\$71.00
No. 3X. Complete, with extra cylinder for 18 hours burning capacity....	83.00
Extra burners .....	.30
No. 2. Complete, with one cylinder for 6 hours burning capacity.....	50.00
No. 2. Complete, with extra cylinder for 12 hours burning capacity....	62.00
Extra burners .....	.30
No. 3W. Complete with one cylinder for 9 hours burning capacity.....	98.00
Extra Carbide Cylinder.....	18.00
Extra Burners.....	.30

Names of Parts

- A. Carbide Trays.
- B. Inside Cylinder.
- C. Outside Cylinder.
- D. Tank.
- E. Burner Standard.
- F. Burner.
- G. Reflector.
- H. Cock.
- I. Plug to Washer.
- J. Inlet Pipe.
- K. Outlet Pipe.
- V. Needle Valve.
- W. Washer.

FOR OTHER STYLES OF LIGHTING DEVICES, SEE INDEX

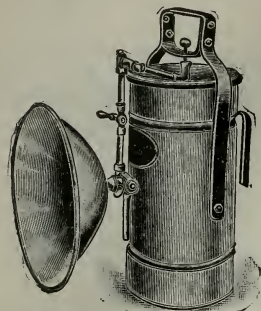


REPAIR PART NUMBERS AND PRICES FOR THE MILBURN LIGHT

TYPE OF LIGHT

Part	3 X		3 W		4 W		4 Z		No. 2		No. 1		"Builder"	
	Part No.	Price	Part No.	Price	Part No.	Price	Part No.	Price	Part No.	Price	Part No.	Price	Part No.	Price
Tank (Without Cylinder)	157	\$32.50	200	\$12.50	247	\$56.00	190	\$50.00	124	\$27.50	94	\$5.00	112	\$7.00
Tank Cover..... (With Gasket)			209	12.00	248	15.00								
Tray	184	2.00	184	2.00	184	2.00	184	2.00	152	1.50			109	.50
Inside Cylinder.....	182	3.00	182	3.00	182	3.00	182	3.00	142	2.50	99	.75	108	1.50
Outside Cylinder....	166	8.00	301	8.00	301	8.00	166	8.00	129	7.00				
Outside Cylinder....												3.50		7.00
Burner Standard.... (Complete with al attached fittings except reflector)	158	12.00	198	10.50	198	10.50	191	24.00	125	11.00				
Top Section of Burner Standard	162	9.50							140	9.50				
(Complete except for reflector)														
Aluminum Reflector.	163	7.50	163	7.50	163	7.50	163	7.50	127	6.00	106	2.50	78	3.50
Steel Reflector Back.	197	2.00	197	2.00	197	2.00	197	2.00	822	1.50				
Reflector Holder....	27	2.25	27	2.25	27	2.25	27	2.25	27	2.25	43	.75	43	.75
Swing Joint:														
Right Hand.....	24	4.50	24	4.50	24	4.50	24	4.50	24	4.50				
Left Hand.....							228	4.50						
Horizontal							30	3.00						
Upper													41	1.50
Lower													40	.90
Swing Joint Handle	204	.25	204	.25	204	.25	204	.25	204	.25				
Needle Valve.....	25	2.50	25	2.50	25	2.50	25	2.50	25	2.50				
Burner	47	.30	47	.30	47	.30	47	.30	23	.30	52	.15	44	.15
Cock	26	2.00	26	2.00	26	2.00	26	2.00	26	2.00	42	1.00	42	1.00
Standpipe	234	2.50							233	2.00				
Thumb Screw:														
Reflector	128	.10	128	.10	128	.10	128	.10	128	.10	80	.10	80	.10
Tank	29	.10					29	.10	29	.10				
Handle													81	.10
Set Screw.....	28	.10					28	.10	28	.10				
Washer Plug.....	35	.25	35	.25	35	.25	35	.25	35	.25				

MILBURN LIGHTS—CARBIDE



"Builder"
500 Candle Power
Fig. 2402Z



No. 22
100 Candle Power
Fig. 2447

These are convenient hand lights for contractors, builders, inspection work, tunnels, mines, etc. Both are provided with hooks so that they may be conveniently hung up anywhere. They light instantly and require no attention during use. They use ordinary commercial carbide and are the most economical source of high power illumination on the market.

SPECIFICATIONS

	"Builder"	No. 22
Height over all.....	19 in.	11 in.
Diameter	7 in.	6 in.
Reflector	10 in.	If desired
Weight empty	11 lbs.	3 lbs.
Weight packed	28 lbs.	8 lbs.
Carbide charge	2½ lbs.	1 lbs.
Burning capacity	10 hrs.	8 hrs.
Operating cost	1c per hour	½c per hour

PRICES

	"Builder"
Complete	\$20.00
Extra burners .....	.15
	No. 22
Complete, with open burner.....	6.00
Complete, with mica wind shield added	6.50
Complete, with aluminum reflector..	7.50

CARBIDE

A superior grade of Calcium Carbide. Only the best raw materials that can be procured are used in its manufacture. The treatment of these materials is the most scientific and thorough, and the Carbide is rich in quantity and quality of gas yield.

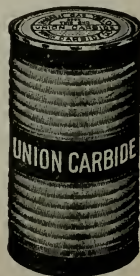
For Flare Lights—Generators

The following sizes of Calcium Carbide are packed in air tight and water tight steel drums, containing 100 pounds net.

"Lump" or	3½ x 2
"Egg" or	2 x ½
"Nut" or	1½ x ¾
"Quarter" or	¾ x ½
List, per 100 lb. drum	\$ 7.50
List, per ton in ton lots or more	140.00
Cake Carbide, per 100 lb. drum	10.00

Always specify size desired

FOR OTHER STYLES OF FLARE AND CARBIDE LIGHTS, SEE INDEX



ELECTRIC FLOOD LIGHTS—MAZDA LAMPS



Foundation of Rialto Theatre, Chicago.
Illuminated with X-Ray Floodlight

Adjustable for long light thrust or close-up diffusion. Furnished for direct conduit connection or with adjustable swivel attachment. Easily moved from place to place.

Reflector made of fire glazed glass, backed up with pure silver. Absolutely waterproof. Well ventilated, easy to focus and install. Designed so all parts are accessible. Cover snaps like automobile headlight. Sturdy construction and built for hard service.

Price, each\$19.50

X-RAY FLOODLIGHT PROJECTOR

67,000 Candlepower with a 250 Watt Lamp

A powerful, compact and durable flood and searchlight, ideal for contractors and builders for night-work illumination. Particularly adapted for excavation and construction operations. Very economical, using only a 250 watt floodlight lamp.

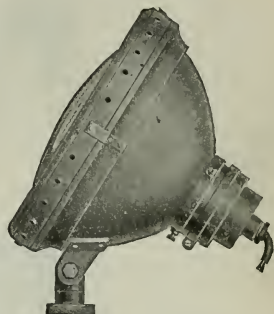


Fig. 51. X-Ray
Projector, Swivel
Attachment

MAZDA LAMPS

In listing the common straight side Mazda lamps, we are showing only the sizes which are most frequently used, although we are prepared to furnish them in sizes up to, and including 1000 watts, or about 1350 candlepower. Always give voltage of your power circuit when ordering Mazda lamps.



G 30.
Floodlight Lamp



250 watt, 105-125 volts,
Mazda Type C (Nitrogen)
G 30 Floodlighting lamp
with medium screw base.
Price, each.....\$2.70

Size of Lamps watts	Number in package	List Price Each			
		105-125 Volts		220-250 Volts	
		Clear	Frosted	Clear	Frosted
10	100	\$0.27	\$0.30		
15	100	.27	.30		
20	100	.27	.30		
25	100	.27	.30	\$0.33	\$0.36
40	100	.27	.30	.33	.36
60	100	.36	.40	.45	.49
100	24	.65	.72	.80	.87
150	24			1.20	1.30
250	12			2.00	2.15

OUR STOCKS OF ELECTRICAL TOOLS AND APPARATUS ARE ALWAYS COMPLETE

MONKEY WRENCHES

Coe's Knife Handle Monkey Wrenches are so well known to the trade that a detailed description of them is not necessary here. We always have a large stock on hand for immediate shipment, in all sizes—both wood and steel handles, and solicit your orders for any quantity required.

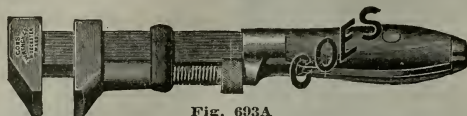


Fig. 603A



Fig. 693B

COE'S KNIFE AND STEEL HANDLE MONKEY WRENCHES

Size, inches.....	4	6	8	10	12	15	18	21
Black, per doz.....	\$8.00	10.00	12.00	14.00	18.00	24.00	32.00	39.00

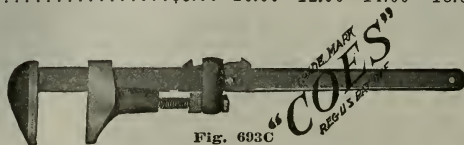


Fig. 693C

NEW KEY MODEL FOR HEAVY WORK

The 28-inch will take 3-inch Standard Pipe Union, the 36-inch a 4-inch, the 48-inch a 9-inch.

Length, Inches	Will Open, Inches	Weight, Each Pounds	Each
28	5 1/4	17	\$12.00
36	6 1/4	27	26.00
48	9	62	57.50



Fig. 693D

"RAILROAD SPECIAL" WRENCHES

This is the strongest and best heavy duty wrench made. Head and bar drop-forged in one piece from selected steel. Extra heavy jaws thoroughly case-hardened. Indestructible iron handle, with hole to attach to belt.

Every wrench guaranteed against defective material and workmanship. Each wrench wrapped in anti-rust paper.

Size Ins.	Price Per Dozen	Jaws Open Ins.	Number in Case	Net and Gross Wt. per Case Lbs.
6	\$10.00	1	72	61-70
8	12.00	1 1/2	72	109-131
10	14.00	1 7/8	72	177-205
12	18.00	2 1/4	72	235-270
15	24.00	2 3/8	48	251-290
18	32.00	3	24	181-205
21	39.00	3 1/2	12	127-150

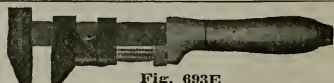


Fig. 693E

STANDARD SCREW MONKEY WRENCH

Drop Forged Steel Bar

This wrench has extra heavy forged steel bar and head—forged from one piece—milled screw thread—steel knurl—opens full.

Inches ...	6	8	10	12	15
Per doz...	\$10.00	12.00	14.00	18.00	24.00



Fig. 693F

TRIMO, MONKEY WRENCH

Hardened Drop Forged Steel Case

The leverage of this wrench is increased in proportion to the size of the nut it is used upon, as the jaw is extending forward to adjust.

Size, in.	6	8	10	12	15	18	21
Per doz.	\$9.00	10.00	12.00	14.00	24.00	30.00	36.00

FOR NUTS AND BOLTS OF ALL STYLES, SEE INDEX

WRENCHES

PATENT ADJUSTABLE WRENCHES



Fig. X9

X-Series

A 9 inch wrench, fully guaranteed. These X-Series wrenches are offered as low-priced, large wrenches for work around automobiles and motorcycles.

Best quality and guaranteed service in a wrench at such a price are worth deepest consideration.

Made in dull nickel plate and mottled finish.

Each Wrench Fully Guaranteed
In ordering specify finish.

No.	Total Lgth. in.	Opens in.	Thick- ness of Jaws in.	Depth of Jaws in.	Wt. oz.	Mottled Finish price each
X- 9	9	2	$\frac{3}{8}$	$1\frac{1}{8}$	13	\$0.30

RONSON WRENCH



The Ronson Wrench embodies nine wrenches. It is very compact, measuring only 6 inches when closed and 9 inches when open for use. Total thickness, $\frac{1}{2}$ inch. The total weight is $\frac{1}{2}$ lb. This wrench is made of high carbon steel, and is carefully tempered.

Each\$1.50



QUEEN CITY ADJUSTABLE WRENCH

Fig. 706

Polished All Over Except Web

Made of a special grade of steel. Hardened all over. Will perfectly operate square as well as hexagon nuts. Fully guaranteed.

No.	Size inches	Capacity inches	Each	Per doz.
706	6	$\frac{3}{4}$	\$0.65	\$7.80
708	8	$\frac{1}{2}$	.80	9.60
710	10	$1\frac{1}{2}$	1.00	12.00
712	12	$1\frac{1}{2}$	1.25	15.00

"KNIFE-HANDLE" MONKEY WRENCHES



Coes Pattern

This is one of the best Knife-Handle Monkey Wrenches on the market and we particularly recommend it when the work does not warrant genuine Coes.

Size	inches	6	8	10	12
Opens	inches	$\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{3}{4}$	$2\frac{1}{2}$
Price, black...	per doz.	\$10.00	12.00	14.00	18.00
Size	inches	15	18	21	
Opens	inches	$2\frac{5}{8}$	3	$4\frac{1}{2}$	
Price, black...	per doz.	\$24.00	32.00	39.00	

WESCOTT'S ADJUSTABLE "S" NUT AND PIPE WRENCHES



Fig. 694B

Size in.	Opens to in.	Nut per doz.	Pipe per doz.	Nut Jaws each	Pipe Jaws each	Thumb Screw each	Plus each
6	$\frac{3}{4}$	\$8.00	\$12.00	\$0.15	\$0.30	\$0.10	\$0.05
8	1	10.00	15.00	.20	.40	.12	.05
10	$1\frac{3}{8}$	12.00	18.00	.30	.50	.15	.05
12	$1\frac{1}{2}$	15.00	24.00	....	....	....	....
14	2	21.00	30.00	....	....	....	....

GEO. B. CARPENTER & CO.

WRENCHES



Fig. 705A



Fig. 705B

Sockets for Ratchet Nut Wrenches

LITTLE GIANT RATCHET NUT WRENCH

Number	Size of Squares	Length	Each		
			Handle	Socket	Complete
1	Squares $\frac{7}{16}$ and $\frac{1}{2}$	8	\$0.50	.50	1.00
2	Squares $\frac{1}{2}$ and $\frac{11}{16}$	10	.75	.50	1.25
3	Squares $\frac{11}{16}$ and $\frac{13}{16}$	13	1.00	.75	1.75
4	Squares $1\frac{1}{8}$ and $1\frac{1}{4}$	16	1.75	1.00	2.75
5	Squares $1\frac{1}{8}$ and $1\frac{1}{2}$	20 $\frac{1}{2}$	2.50	1.25	3.75

STILLSON PIPE WRENCHES

Ten-inch and larger Wrenches will always be sent with Steel Handles unless otherwise specified.



Fig. 705C

All styles of Stillson Wrenches, sizes 6 to 24 inches, are packed six of one size to the box.

PRICE LIST

Length, Open	inches	6	8	10	14	18	24	36	48
Takes Pipe.....inches	$\frac{1}{2}$ to $\frac{1}{2}$	$\frac{1}{2}$ to $\frac{3}{4}$	$\frac{3}{4}$ to 1	$1\frac{1}{4}$ to $1\frac{1}{2}$	$1\frac{1}{2}$ to 2	$2\frac{1}{4}$ to $2\frac{1}{2}$	$2\frac{1}{2}$ to $3\frac{1}{2}$	$3\frac{1}{2}$ to 5	1 to 5
Price	each	\$2.00	2.25	2.50	3.50	5.00	7.25	13.50	20.00

REPAIR PARTS FOR STILLSON WRENCHES

Size	inches	6	8	10	14	18	24	36	48
Jaws	each	\$0.75	.80	.85	1.15	1.75	2.25	4.35	7.50
Frames	each	.38	.42	.50	.60	.75	.95	1.70	2.20
Adjusting Nuts	each	.12	.15	.20	.30	.35	.55	1.10	1.50
Wood Handles	each	.16	.16	.18	.22	...	...	...	...
End Nuts	each	.15	.15	.20	.20	...	...	...	...
Frame Pins	each	.03	.03	.04	.04	.04	.04	.05	.05
Spring Rivets	each	.02	.02	.03	.03	.03	.03	.03	.03
Springs	each	.03	.03	.03	.03	.04	.04	.04	.04
Bars	each	.95	1.00	1.10	1.50	2.25	3.50	7.00	10.50
Number of Springs to Each Wrench...		1	1	3	3	3	3	1	1

TRIMO PIPE WRENCHES



Fig. 705D



Fig. 705E

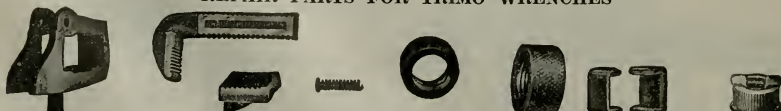
PRICE LIST

Prices of Wood Handle Pipe Wrenches same as Steel Handle

If desired can furnish in 6 in., 8 in., 10 in., 14 in.

Length, Open	inches	6	8	10	14	18	24	36	48
Taking from	$\frac{1}{2}$ in. wire to $\frac{1}{2}$ in. pipe	$\frac{1}{2}$ in. wire to $\frac{1}{2}$ in. pipe	$\frac{1}{2}$ in. wire to 1 in. pipe	$\frac{1}{2}$ in. wire to $1\frac{1}{2}$ in. pipe	$\frac{1}{2}$ in. wire to 2 in. pipe	$\frac{1}{2}$ in. wire to $2\frac{1}{2}$ in. pipe	$\frac{1}{2}$ in. pipe to $3\frac{1}{2}$ in. pipe	1 in. pipe to 5 in. pipe	
Price	each	\$2.00	2.25	2.50	3.50	5.00	7.25	13.50	20.00

REPAIR PARTS FOR TRIMO WRENCHES



Movable Jaw.....each	\$0.75	.80	.85	1.15	1.75	2.25	4.35	7.50	
Nut .....	.12	.15	.20	.30	.35	.55	1.10	1.50	
Insert Jaw .....	.35	.40	.50	.60	.70	.80	1.10	2.00	
Frame .....	.38	.42	.50	.60	.75	.95	1.70	2.20	
Springs .....	.03	.03	.03	.03	.04	.04	.04	.04	
Frame Pins .....	.03	.03	.04	.04	.04	.04	.05	.05	
Jaw Pins .....	.03	.03	.04	.04	.04	.04	.05	.05	
Steel Handles .....	.95	1.00	1.10	1.50	2.25	3.50	7.00	10.50	
Wood Handle with Ferrule, ea.	.16	.16	.18	.25	...	...	...	...
Nut Guards.....per pair	.15	.15	.20	.30	.35	.45	.55	.65	

ALLIGATOR JAW AND PIPE WRENCHES

THE ALLIGATOR WRENCH

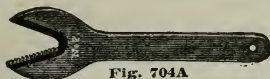


Fig. 704A

No.	Inches Long	Holds Pipe	Holds Round Iron	Per Doz.
1	5 3/4	1/4 to 3/8	1/4 to 3/8	\$4.00
2	9	3/8 to 1/2	1/2 to 1	12.00
3	16	1/2 to 1 1/4	3/4 to 1 3/8	24.00
4	22	1 1/4 to 2	1 1/2 to 2 1/2	36.00
4 1/2	24	1 1/4 to 2 1/2	1 5/8 to 3	50.00
5	27	2 to 3	2 1/4 to 3 1/2	60.00

TRIMO PIPE WRENCH

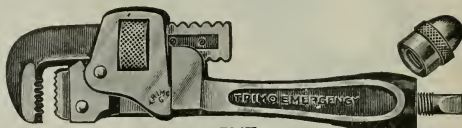


Fig. 704E

With Screw Driver

6 in. pocket size only. Takes pipe up to 1/2 in. Jaws and handle forged-steel. Screw driver, which is renewable, is made of suitable steel and is serviceable. Parts interchangeable.

List Price, each.....\$2.50

PARMALEE PIPE WRENCH



Fig. 704C

This wrench has no teeth. It will make or break the tightest joint without marring or crushing the pipe or injuring the threads.

Extra parts will be furnished as required. Special girths may be ordered to fit 1/4 inch and 1/2 inch pipe sizes (also all odd sizes of Brass or Steel Tubing) and rods of any diameter from 3/8 to 3 1/2 inch outside diameter.

Length Handle	Set No.	Pipe Handled	Set Complete	Extra Handle	Extra Girths, Each
10 in.	1	3/8, 1/2, 3/4, 1 in.	\$ 5.00	\$2.25	3/8, 1/2, 3/4, 1 in....\$0.75
20 in.	2 1/2	3/4, 1, 1 1/4, 1 1/2, 2 in.	7.50	3.00	{ 3/4, 1, 1 1/4 in.....1.00 1 1/2, 2 in.....1.25
25 in.	4	2, 2 1/2, 3 in.	9.50	5.00	2, 2 1/2, 3 in.....1.50
....	5	3 1/2, 4 in.	13.00	7.50	3 1/2 in. \$2.50, 4 in. 3.00

TRIMO WOOD HANDLE NARROW JAW PIPE WRENCH



Fig. 704D

Invaluable for "Auto Kits" and for close-quarter work

The jaws are narrowed materially, and can be used in places where the ordinary width of jaw cannot operate. Made in three sizes only—6 inch, 8 inch, and 10 inch.

It is light in weight, and particularly designed for Automobile and Gasfitters' use. No outfit complete without this tool.

PRICE LIST

Length Open, in. Ins.	6	8	10
Takes from	1/8 in. wire to 1/2 in. pipe	1/8 in. wire to 3/4 in. pipe	1/8 in. wire to 1 in. pipe
Price, each	\$2.00	\$2.25	\$2.50

Extra Parts for Above Wrench

	6	8	10
Movable Jaw.....each	\$0.75	\$0.80	\$0.85
Nut.....each	.12	.15	.20
Insert Jaw.....each	.35	.40	.50
Frame.....each	.38	.42	.50
Springs.....each	.03	.03	.04
Frame Pins.....each	.03	.03	.04
Jaw Pins.....each	.03	.03	.04
Nut Guards.....each	.15	.15	.20
Nut Guards.....per pair			

PIPE WRENCHES—PIPE CUTTERS

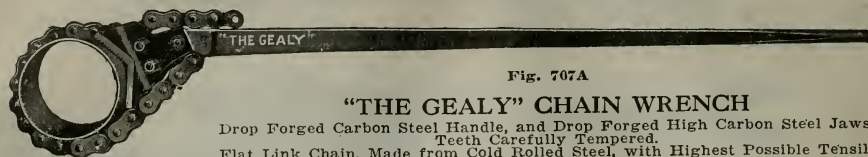


Fig. 707A

"THE GEALY" CHAIN WRENCH

Drop Forged Carbon Steel Handle, and Drop Forged High Carbon Steel Jaws;
Teeth Carefully Tempered.
Flat Link Chain, Made from Cold Rolled Steel, with Highest Possible Tensile Strength.

PRICE LIST

Size	No. 00	No. 0	No. 1	No. 2	No. 3
Takes Pipe Inches	$\frac{3}{4}$ -2	1-4	2-6	2 $\frac{1}{2}$ -10	3-14
Length Inches.....	18	30	42	60	66
Weight lbs.....	3 $\frac{1}{2}$	12	25	50	75
Length Chain.....	11	19	28	44	56
Price Each Complete.....	\$3.00	4.50	8.00	16.00	30.00
Extra Chains.....	.80	1.50	2.75	4.25	9.00
Extra Jaws, Pair.....	1.25	2.00	4.00	7.00	10.00
Extra Jaw Bolts.....	.20	.22	.25	.30	.30
Extra Handle Bolts.....	.20	.25	.30	.35	.40

Special length of chain to order. No. 3 Wrench adapted to take 16 inch pipe if desired.

COCHRAN PIPE WRENCH



Fig. 707C

The handle and frame are made in one piece. This gives a compression strain instead of a shearing strain on the frame pin or rivet, and eliminates the repair charges which usually result from injury to a wrench through side-pull.

PRICE LIST

Size	6	8	10	14	18	24	36
No. Takes pipe....	$\frac{1}{2}$ to $\frac{3}{4}$	$\frac{3}{4}$ to 1	$\frac{1}{2}$ to $\frac{1}{2}$	$\frac{1}{2}$ to $\frac{1}{2}$	$\frac{1}{2}$ to 2	$\frac{1}{2}$ to $\frac{1}{2}$	$\frac{1}{2}$ to $\frac{1}{2}$
1 Each complete.....	\$2.00	\$2.00	\$2.25	\$3.00	\$4.00	\$6.00	\$12.00
2 Hook Jaws, each.....	.67	.67	.75	1.00	1.33	2.00	4.00
3 Inserted jaws.....	.25	.25	.33	.50	.55	.65	1.00
4 Rockers.....	.25	.25	.28	.40	.50	.65	1.30
5 Nuts.....	.20	.20	.28	.35	.42	.55	.85
6 Springs.....	.12	.12	.14	.17	.21	.25	.40

THE "VULCAN-BIJAW" PIPE WRENCH

Patent Drop-Forged Chain Pipe Wrench with
Double Ended Reversible Jaws and
Either Cable or Flat Link Chain

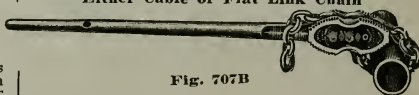


Fig. 707B

With Flat Link Chain

Size No.	Capacity inches	Lgth. in.	Weight lbs.	Price Complete	Extra (chains) Each	Extra Jaws per Pair
30	$\frac{1}{2}$ to $\frac{3}{4}$	13 $\frac{3}{4}$	1 $\frac{1}{2}$	\$2.50	\$0.75	\$1.00
31	$\frac{1}{2}$ to 1 $\frac{1}{2}$	20	4 $\frac{1}{2}$	3.50	1.00	1.75
32	$\frac{3}{4}$ to 2 $\frac{1}{2}$	27	8 $\frac{1}{2}$	5.00	1.50	2.75
33	$\frac{3}{4}$ to 4	37	16	7.00	2.50	4.00
33 $\frac{1}{2}$	1 to 6	44 $\frac{1}{2}$	20	9.00	3.25	4.75
34	$\frac{1}{2}$ to 8	50 $\frac{1}{2}$	29	11.00	4.00	5.50
35	2 to 12	64	49	18.00	6.00	7.50
16	4 to 18	87	137	40.00	13.00	16.00

TRIMO PIPE CUTTER



Fig. 707D

No thread in the frame or roll block to wear out. A small case hardened nut adjusts the handle screw, and is easily and cheaply replaced when worn. The wheels are drop-forged, have long hubs, affording ample bearing on pins. Used as a single wheel with rolls, pipe is cut without a burr ready for the threading die. Easily converted into a three-wheel cutter by simply substituting two wheels for the two rolls.

Sizes	No. 1	No. 2	No. 3
Cuts Pipe	$\frac{1}{2}$ to 1 $\frac{1}{2}$	$\frac{1}{2}$ to 2	1 $\frac{1}{2}$ to 3
Each	\$4.50	\$6.00	\$10.00
Extra Nuts.....each	\$0.35	\$0.35	\$0.40
Extra Wheels.....each	.30	.30	.40
Extra Rolls.....each	.30	.30	.40
Extra pins with Cotter Pins.....per doz.	1.00	1.00	1.00
Extra Anti-Friction Washers.....per doz.	.60	.60	.60
Extra Fork Block Carrier.....each	1.10	1.10	1.10
Extra Block.....each	1.25	1.25	1.75
Extra Frame.....each	2.00	2.25	2.50
Extra Handle Screw.....each	1.00	1.25	2.00
Extra Handle.....each	.35	.35	.35

FOR OTHER STYLES OF CHAIN AND PIPE WRENCHES, ALSO PIPE CUTTERS, SEE INDEX

TUBE EXPANDERS—PIPE CUTTERS



Fig. 706A

ROLLER TUBE EXPANDER

Size of Tube, outside diam., inches	1	1 1/4	1 1/2	1 3/4	1 7/8	2	2 1/4	2 1/2	2 3/4
Price	each \$10.00	10.00	10.00	10.00	10.00	10.00	12.00	14.00	16.00
Size of Tube, outside diam., inches	3	3 1/4	3 1/2	3 3/4	4	4 1/4	4 1/2	5	6
Price	each \$18.00	20.00	23.00	25.00	30.00	35.00	40.00	50.00	60.00



Fig. 706B

SPRING TUBE EXPANDER

Size of Tube, outside diam. inches	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	4	4 1/2
Price	each \$8.00	8.00	9.00	11.00	12.00	13.00	15.00	18.00	22.00	26.00	30.00	33.00	37.00
Extra pins	\$1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	4.00	4.50

When ordering give thickness of tube sheet.

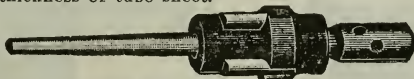


Fig. 706C

BOSS TUBE EXPANDER

Diameter inches	1	1 1/4	1 1/2	1 3/4	1 7/8	1 3/4	1 7/8	2	2 1/4
Price	each \$11.00	11.00	11.00	11.00	11.00	11.00	12.50	13.00	15.00
Diameter inches	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	
Price	each \$15.50	16.50	17.00	18.00	19.00	20.00	22.00	24.00	28.00

IDEAL SELF-FEED TUBE CUTTER

(Wiedeke Patent)

This Tube Cutter is the only one the market today that has solved the problem of cutting off steel tubes without cracking them.

New tubes are cut off the same distance from the boiler head no matter if they project out 1/2 inch or 4 inches (see illustration); they are cut with a bevel ready for heading, and rolled at the same time.

For cutting out old tubes on the inside of boiler heads, simply set the guards back, as shown in illustration, which can be done in less than half a minute.

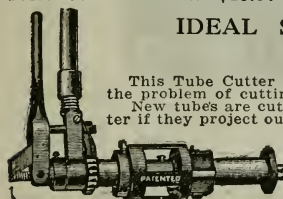


Fig. 706D

Diam., inches	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	4	4 1/2	5	5 1/2	6
List Price	\$15.00	16.00	17.00	18.00	22.00	22.50	23.00	24.00	37.00	39.00	39.50	40.00

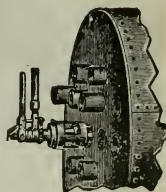


Fig. 706E

PIPE CUTTERS



Fig. 706F

SAUNDER'S WHEEL PIPE CUTTER

No.	Cuts inches	Each	Extra Parts		
			Wheels each	Block and Wheel each	Rollers Each
1	1/8 to 1	\$3.00	\$0.25	\$1.25	\$0.25
2	1 to 2	4.50	.35	1.75	.35
3	2 to 3	11.00	.60	3.25	.50



Fig. 706G

BARNES THREE-WHEEL PIPE CUTTER

No.	Cuts inches	Each	Extra Parts	
			Wheels, each	Pins, each
1	1/8 to 1	\$4.50	\$0.25	\$0.10
2	1 1/2 to 2	6.00	.30	.10
3	1 1/2 to 3	10.00	.40	.12
4	2 1/2 to 4	20.00	.50	.15
5	4 to 6	30.00	.75	.20
6	6 to 8	40.00	1.00	.25
7	9 to 12	50.00	1.25	.25

DROP FORGED WRENCHES

BEMIS & CALL CO.'S
COMBINATION WRENCHES

Fig. 695A. Bright—With Long Nut

Size		Per doz.	Each
8-inch	Adjustable to pipe from ¼-in. to ¾-in. in diameter.....	\$23.00	\$2.30
10-inch	Adjustable to pipe from ¼-in. to 1-in. in diameter.....	25.25	2.50
12-inch	Adjustable to pipe from ½-in. to 1½ in. in diameter.....	28.50	2.85
15-inch	Adjustable to pipe from ½-in. to 2¼ in. in diameter.....	40.50	4.05
18-inch	Adjustable to pipe from ½-in. to 3-in. in diameter.....	72.00	7.20

STEEL SOCKET BRIDGE WRENCH



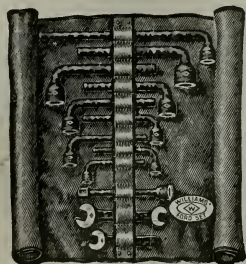
Fig. 695B

Will turn nut either way without removing wrench. Made from carefully selected steel castings and warranted to give satisfaction. Capacities listed are either square or hex. nuts.

Including One Socket Only

No.	Length Handle Feet	Will take Sockets having Openings Size, inches	Wt. lbs.	Each	Extra Sockets Each
1	2	1¼, 1½, 1¾, 1½, 2	10	\$ 6.00	\$1.00
2	3	2¼, 2½, 2¾, 2½, 2¾, 3	23	14.00	2.50
3	3	3½, 3¾, 3½, 4¼, 4½, 5	50	20.00	4.50

"FORD" SETS OF SUPERIOR DROP FORGED WRENCHES



"Ford" Set "A"

These Wrenches will
Fit Any Nut on a
Ford Car.

SET "A"



"Ford" Set "B"

Number	Class	Opening Size	Extreme Length	Price		
				Unfinished	Semi-finished	Finished
27	D. H. Engineers'	1½ & 1½	5½	\$0.21	\$0.31	\$0.46
702	S. H. Cap Screw.	1½	4¾	.15	.22	.32
963D	Offset Socket	1½	4½	.24	.36	.48
964A	Offset Socket	1½	5½	.26	.39	.52
*965D	Straight Socket	1½	5½	.29	.44	.58
965D	Offset Socket	1½	5½	.29	.44	.58
965A	Offset Socket	1½	5½	.29	.44	.58
966DS	Offset Socket	1½	11	.42	.63	.84
*967A	Offset Socket	1½	6¾	.36	.54	.72
967D	Offset Socket	1½	6¾	.36	.54	.72
968A	Offset Socket	1½	7½	.40	.60	.80
969A	Offset Socket	1½	8¾	.46	.69	.92
"Ford" Set "A"	List Price of Roll, \$0.60 extra.			\$3.73	\$5.60	\$7.52

*Use Wrench No. 967A as lever for Wrench No. 965D.

SET "B"

Number	Class	Opening Size	Extreme Length	Price		
				Unfinished	Semi-finished	Finished
27C	D. H. Engineers'	1½ & 1½	5½	\$0.21	\$0.31	\$0.46
729	D. H. Cap Screw	1½ & ¾	6¾	.25	.37	.56
33C	D. H. Engineers'	1½ & 1	8¾	.37	.55	.85
734	D. H. Cap Screw	¾ & 1½	9¾	.46	.68	1.08
966DS	S. H. Socket	1½	11	.42	.63	.84
"Ford" Set "B"	List Price of Roll, \$0.45 extra.			\$1.71	\$2.54	\$3.79

SOCKET WRENCH SETS

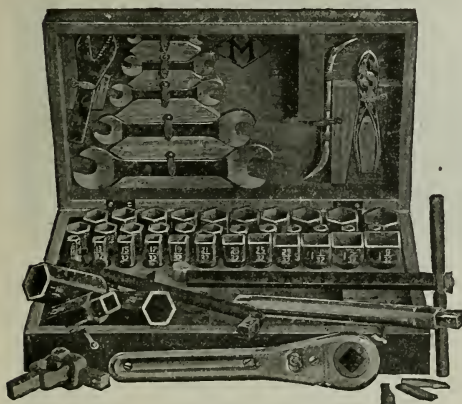


Fig. 14

SIZES OF HEXAGON SOCKETS

$$\frac{5}{16}, \frac{3}{8}, \frac{13}{32}, \frac{7}{16}, \frac{15}{32}, \frac{1}{2}, \frac{17}{32}, \frac{19}{32}, \frac{5}{8}, \frac{31}{32}, \frac{11}{16}, \frac{33}{32}, \frac{35}{32}, \frac{13}{16}, \frac{37}{32}, \frac{7}{8}, \frac{39}{32}, \frac{41}{32},$$

$$1, 1\frac{1}{32}, 1\frac{3}{32}, 1\frac{5}{32}, \text{ and } 1\frac{7}{32}.$$

SIZES OF SQUARE SOCKETS

$\frac{1}{32}, \frac{1}{16}, \frac{1}{8}, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, \frac{5}{8}, \frac{3}{2}, 1, \frac{5}{4}, \frac{3}{2}$ and $\frac{1}{2}$.

Price, set complete.....\$12.00

Fig. 7 SOCKET WRENCH SET

This set has fifteen sockets and two handles. Sockets are the most needed sizes.

Each set contains the following hexagon sockets: $\frac{1}{32}$, $\frac{1}{16}$, $\frac{1}{8}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{11}{16}$, $\frac{3}{4}$, $\frac{13}{16}$, $\frac{7}{8}$, $1\frac{1}{16}$, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$. Also spark plug socket.

Price, set complete.....\$3.00

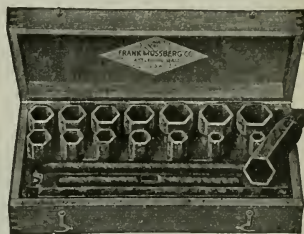


Fig. 7

GENERAL SERVICE SET

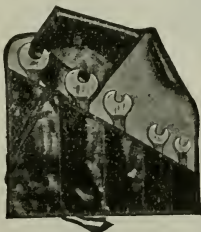


Fig. 703A

Stamped Steel

Five wrenches to a set. Openings $\frac{1}{4}$ inch to 1 inch. Packed in waterproof canvas bag.

Price semi-finished	\$1.18
---------------------------	--------

Price semi-finished	\$1.18
Price full finished	1.52

Illustration Shows Full Finished

REPAIR KIT SET



Fig. 675

Every tool a much needed and handy article. Contains Cylinder Head Wrench, Hub Cap Wrench, Connecting Rod Wrench, Valve Grinder and Brake Pedal Spring Wrench.

Price complete set.....\$1.30

TOOL SETS IN ROLLS

40-PIECE MECHANICIAN
AUTO TOOL KIT

A most complete assortment of the finest quality and best finished tools, and every tool is thoroughly practical and indispensable. All that is required to make all repairs on road or in garage.

The tool roll is made of extra heavy brown canvas, riveted double tool straps of leather, bound with leatherette binding and heavy leather strap and buckle.

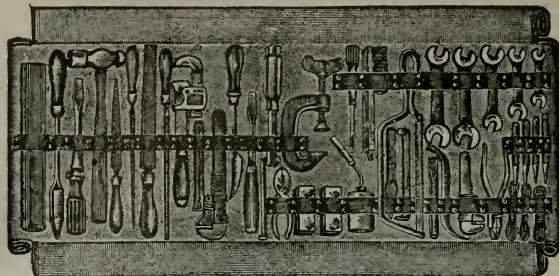


Fig. 110

Contains the following tools:

- | | | |
|----------|---|-------------|
| No. 23 | Semi-finished 15° Angle | Drop Forged |
| Wrench. | | |
| No. 25 | Semi-finished 15° Angle | Drop Forged |
| Wrench. | | |
| No. 27 | Semi-finished 15° Angle | Drop Forged |
| Wrench. | | |
| No. 29 | Semi-finished 15° Angle | Drop Forged |
| Wrench. | | |
| No. 31 | Semi-finished 15° Angle | Drop Forged |
| Wrench. | | |
| 10-inch | Stillson Wood Handle Pipe Wrench. | |
| 9-inch | Ebony Automobile Monkey Wrench. | |
| 5-inch | Nickel Plated Bicycle Wrench. | |
| 7/8-inch | Spark Plug Socket Wrench, janned. | |
| 6-inch | Nickel Plated, Adjustable, Combination | |
| Pliers. | | |
| 3-inch | Electricians' Round Shank Screwdriver. | |
| 5-inch | Electricians' Square Shank Screwdriver. | |
| 9-inch | Machinists' All-steel Screwdriver. | |
| 8-inch | Square File with handle. | |
| 3/4-inch | Solid Punch, half-polished, 1/4-inch Point. | |
| 1/2-inch | Solid Punch, half-polished, 1/2-inch Point. | |
| 1/4-inch | Drift Punch, half-polished, 1/4-inch Point. | |

List price.....\$15.00
S. A. E. Wrenches furnished if desired

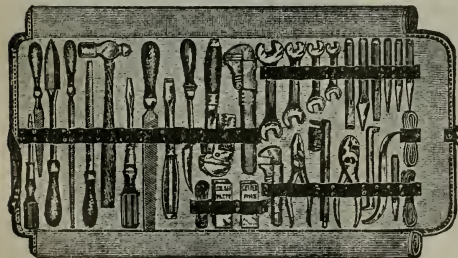


Fig. 130

Contains the following tools:

- | | | |
|----------|---|-------------|
| No. 23 | Semi-finished 15° Angle | Drop Forged |
| Wrench. | | |
| No. 25 | Semi-finished 15° Angle | Drop Forged |
| Wrench. | | |
| No. 27 | Semi-finished 15° Angle | Drop Forged |
| Wrench. | | |
| No. 29 | Semi-finished 15° Angle | Drop Forged |
| Wrench. | | |
| 10-inch | Stillson Wood Handle Pipe Wrench. | |
| 9-inch | Ebony Automobile Monkey Wrench. | |
| 5-inch | Nickel Plated Bicycle Wrench. | |
| 6-inch | Adjustable, Combination Pliers, Ebony. | |
| 3-inch | Electricians' Round Shank Screwdriver. | |
| 5-inch | Electricians' Square Shank Screwdriver. | |
| 5-inch | Offset, Drop Forged Screwdriver. | |
| 9-inch | Machinists' All-steel Screwdriver. | |
| 1/4-inch | Solid Punch, half-polished, 1/4-inch Point. | |
| 1/2-inch | Solid Punch, half-polished, 1/2-inch Point. | |
| 1/4-inch | Drift Punch, half-polished, 1/4-inch Point. | |

List price.....\$12.00
S. A. E. Wrenches furnished if desired.

34-PIECE CHAUFFEUR AUTO KIT

A very complete assortment of high grade tools designed to meet the demand for a reasonable priced kit. Tools are positively high grade and are warranted unequalled at the price. The tool roll is made of heavy brown canvas, leather tool straps, double riveted. Bound with leatherette binding and has a heavy leather strap and buckle.

- | | |
|-----------|--------------------------------------|
| 3/4-inch | Center Punch, half-polished. |
| 3/4-inch | Cotter Pin Extractor, full-polished. |
| No. 1 | Machinists' Bearing Scraper. |
| 8 oz. | Machinists' Ball Pein Hammer. |
| 6-inch | Side Cutting Pliers. |
| 4-inch | Flat File with handle. |
| 8-inch | Flat File with handle. |
| 7-inch | Round File with handle. |
| 8-inch | Square File with handle. |
| Box | Solder Paste. |
| Box | Assorted Cotter Pins. |
| Spark | Plug Brush. |
| 3/4-inch | Cold Chisel, half-polished. |
| 1/2-inch | Cold Chisel, half-polished. |
| 1/2-inch | Cape Chisel, half-polished. |
| Bundle | Wire Solder. |
| Soldering | Copper with handle. |
| Bundle | 15 Copper Wire. |
| Bundle | 20 Copper Wire. |

TOOL SETS IN ROLLS

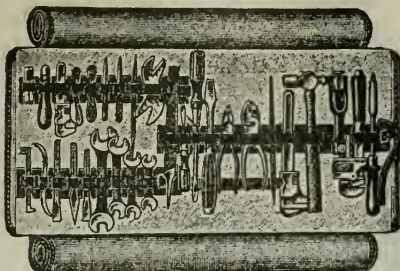


Fig. 15C

30-PIECE MOTORIST'S SERVICE KIT

This is a very complete assortment of high-grade tools, necessary for making all repairs. Every tool is high grade and fully warranted.

The tool roll is made of heavy water-proof brown canvas, with leather tool straps. All is bound with leatherette binding and has a heavy leather strap with buckle.

An excellent outfit for auto owner.

Contains the following Tools:

No. 23 Semi-finished 15° Angle Drop Forged Wrench.	3/8-inch Center Punch, half-polished.
No. 25 Semi-finished 15° Angle Drop Forged Wrench.	3/8-inch Cold Chisel, half-polished.
No. 27 Semi-finished 15° Angle Drop Forged Wrench.	1/2-inch Cold Chisel, half-polished.
No. 31 Semi-finished 15° Angle Drop Forged Wrench.	1/2-inch Cape Chisel, half-polished.
10-inch Stillson Wood Handle Pipe Wrench.	3/8-inch Cotter Pin Extractor.
9-inch Ebony Automobile Monkey Wrench.	No. 1 Machinists' Bearing Scraper.
Double Jaw "Ready Grip" Wrench, polished.	8 oz. Machinists' Ball Pein Hammer.
3-inch Electricians' Round Shank Screwdriver.	File Handle.
5-inch Electricians' Round Shank Screwdriver.	8-inch Flat File.
9-inch Machinists' All-steel Screwdriver.	6-inch Side-Cutting Pliers.
5-inch Offset Drop Forged Screwdriver.	Spark Plug Socket Wrench.
6-inch Ebony, Adjustable, Combination Pliers.	Box Assorted Cotter Pins.
3/8-inch Solid Punch, half-polished, 1/8-inch Point.	8-inch Round File.
	6-inch Three Corner File.
	5-inch Black Bicycle Wrench.
	Bundle 15 Copper Wire.
	Bundle 20 Copper Wire.

List price.....\$9.00

S. A. E. Wrenches furnished if desired

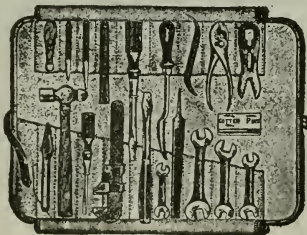


Fig. 111C

20-PIECE TOURISTS AUTO KIT

A very practical and useful assortment, suitable for the medium priced cars. It has tools necessary for any ordinary repairs.

All tools are high grade and guaranteed. Tool roll is made of heavy brown duck, with pockets for each tool, bound with leatherette and has heavy web strap and slip buckle.

Contains the following Tools:

No. 23 Semi-finished 15° Angle Drop Forged Wrench.	9-inch Machinists' All-steel Screwdriver.
No. 25 Semi-finished 15° Angle Drop Forged Wrench.	7-inch Flat File.
No. 27 Semi-finished 15° Angle Drop Forged Wrench.	6-inch Ebony, Adjustable, Combination Pliers.
No. 29 Semi-finished 15° Angle Drop Forged Wrench.	3/8-inch Solid Punch, half-polished, 1/8-inch Point.
Single Jaw Wrench, half-polished.	3/8-inch Center Punch, half-polished.
9-inch Ebony Automobile Wrench.	3/8-inch Cold Chisel, half-polished.
3-inch Electricians' Round Shank Screwdriver.	1/2-inch Cape Chisel, half-polished.
5-inch Electricians' Square Shank Screwdriver.	3/8-inch Cotter Pin Extractor.
	8 oz. Machinists' Ball Pein Hammer.
	No. 1 Machinists' Bearing Scraper.
	Box Assorted Cotter Pins.
	File Handle.

List price.....\$6.00

S. A. E. Wrenches can be supplied if required

TOOL SETS IN ROLLS

20-PIECE COMMERCIAL CAR KIT



Fig. 19C

This kit contains an assortment of extra heavy tools, particularly adapted for auto trucks. Tools are of highest quality and fully warranted.

The canvas roll is made of heavy brown water-proof duck with pocket for each tool; bound with leatherette binding and is furnished with heavy web strap and slip buckle.

Contains the following Tools:

- No. 23 Semi-finished 15° Angle Drop Forged Wrench.
- No. 27 Semi-finished 15° Angle Drop Forged Wrench.
- No. 31 Semi-finished 15° Angle Drop Forged Wrench.
- No. 34 Semi-finished 15° Angle Drop Forged Wrench.
- 10-inch Stillson Wood Handle Pipe Wrench.
- 11-inch Mottled Automobile Monkey Wrench with tire iron handle.
- 3-inch Electricians' Round Shank Screwdriver.
- 6-inch Electricians' Square Shank Screwdriver.
- 6-inch Offset Drop Forged Screwdriver.
- 9-inch Machinists' All-steel Screwdriver.
- 7-inch Flat File.
- 7-inch Round File.
- File Handle.
- 8-inch Mottled Adjustable Combination Pliers.
- ½-inch Solid Punch, half-polished, ¼-inch Point.
- ½-inch Cold Chisel, Natural Finish.
- ½-inch Cape Chisel, Natural Finish.
- ⅜-inch Cotter Pin Extractor.
- 1 lb. Machinists' Ball Pein Hammer.
- Box Assorted Cotter Pins.

List price.....\$8.00

S. A. E. Wrenches can be supplied if required

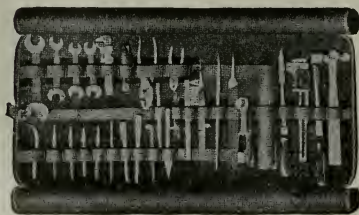


Fig. 17C

30-PIECE GARAGE REPAIR KIT

Designed particularly for the garage mechanic. Contains a good assortment of necessary tools for garage use.

All tools guaranteed.

Case is made of heavy brown duck and has adjustable webbing tool straps.

Contains the following Tools:

- No. 25 Semi-finished 15° Angle Drop Forged Wrench.
- No. 27 Semi-finished 15° Angle Drop Forged Wrench.
- No. 27 Semi-finished 15° Angle Drop Forged Wrench.
- No. 731A Semi-finished 15° Angle Drop Forged Wrench.
- 9-inch Ebony Auto Wrench.
- 5-inch Nickel Plated Bicycle Wrench.
- 7-inch Spark Plug Wrench.
- 4-inch Nickel Plated Pliers.
- 10-inch Mottled Adjustable Combination Pliers.
- 5-inch Square Shank Screwdriver.
- 6-inch Flat File.
- 8-inch Round File.
- 8-inch Half Round File.
- File Handle.
- 3½-inch Center Punch, half-polished.
- 3½-inch Solid Punch, half-polished.
- 3½-inch Solid Punch, ¼-inch Point, half-polished.
- 3½-inch Drift Punch, ½-inch Point, half-polished.
- 3½-inch Cold Chisel, half-polished.
- 1½-inch Cold Chisel, half-polished.
- 1½-inch Cape Chisel, half-polished.
- 1½-inch Cape Chisel, half-polished.
- 1½-inch Blk. Cotter Pin Extractor.
- 5-inch Offset Screwdriver.
- Sheet Emery Cloth.
- Bundle No. 15 Copper Wire.
- No. 1 Bearing Scraper.
- 10 oz. Machinists' Ball Pein Hammer.
- Spark Plug Brush.

List price.....\$8.50

S. A. E. Standard Wrenches will be furnished if desired

DROP FORGED WRENCHES

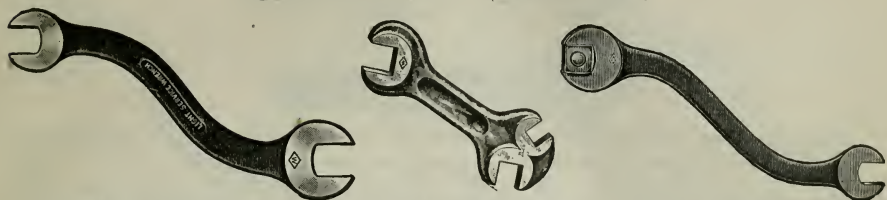


Fig. 675B. General Purpose

Fig. S94A. Triple Head

Fig. 380. Car

Fig. 675B. GENERAL PURPOSE OR CARRIAGE MAKERS' WRENCHES

22½° angle, double head, long and light. These wrenches can be furnished from stock in boxes or canvas rolls and milled to any combination of openings shown below. For desirable selections in sets see other wrench pages.

No.	Openings Milled	Extreme Length	Thickness Heads	Price		
				Unfinished	Semi-Finished	Finished
675B	¾ & 7/8	6¼	1/4	\$0.18	\$0.27	\$0.38
675A	¾ & 1½	6¼	1/4	.18	.27	.38
675	¾ & 1½	6¼	1/4	.18	.27	.38
677B	1/2 & 9/8	7¼	3/8	.23	.34	.47
677	1/2 & 9/8	7¼	3/8	.23	.34	.47
679A	7/8 & 1½	8¼	1/2	.29	.43	.58
679	7/8 & 1½	8¼	1/2	.29	.43	.58
681	1½ & 2½	9¼	3/8	.38	.55	.72
681B	1½ & 2½	9¼	3/8	.38	.55	.72
681A	¾ & 7/8	9¼	3/8	.38	.55	.72
683	2½ & 1½	10¾	1/2	.50	.70	.90
683B	7/8 & 1	10¾	1/2	.50	.70	.90
683A	1 & 1	10¾	1/2	.50	.70	.90
685	1 & 1½	12	1/2	.70	1.00	1.30
685A	1 & 1½	12	1/2	.70	1.00	1.30
685C	1½ & 1¼	12	1/2	.70	1.00	1.30
685B	1½ & 1¼	12	1/2	.70	1.00	1.30

Fig. 380. CAR WRENCHES

22½° Angle, Double Head, Long Leverage

Unfinished are broached or milled only.

Semi-finished are broached, case-hardened all over; heads not ground.

No.	For U. S. Standard Nuts Size Bolts	Openings	Extreme Length	Thickness Heads	Price	
					Unfinished	Semi-Finished
367	¾ & 1/2	2½ & 2½	12	1/2 & 1/2	\$0.55	\$0.75
370	¾ & 1/2	1½ & 1½	19	1/2 & 1/2	.95	1.25
371	1½ & ¾	1½ & 1½	19	1/2 & 1/2	1.15	1.55
373	¾ & ¾	1½ & 1½	20	1/2 & 1/2	1.15	1.55
374	5/8 & 7/8	1½ & 1½	21	1/2 & 1/2	1.35	1.85
376	¾ & ¾	1½ & 1½	21	1/2 & 1/2	1.35	1.85
377	¾ & 1	1½ & 1½	22	1/2 & 1/2	1.65	2.25
379	¾ & 1	1½ & 1½	22	1/2 & 1/2	1.65	2.25
380	7/8 & 1½	1½ & 1½	23	1/2 & 5/8	1.95	2.65
382	1 & 1½	1½ & 1½	23	1/2 & 5/8	1.95	2.65
383	1 & 1¼	1½ & 2½	24	5/8 & 5/8	2.25	3.15
385	1½ & 1¼	1½ & 2½	24	5/8 & 5/8	2.25	3.15
387	1½ & 1½	1½ & 2½	25	5/8 & 3/4	3.40	4.50
389	1½ & 1½	2½ & 2½	25	5/8 & 3/4	3.40	4.50

Fig. 894A. TRIPLE HEAD WRENCHES

For U. S. Standard Nuts and Set Screws

No.	For U. S. Standard Nuts Size Bolts	For Set Screws Sizes	Extreme Length	Thickness Heads	Price		
					Unfinished	Semi-Finished	Finished
894A	¾, ¾, 1/2		5½	3/8	\$0.40	\$0.56	\$0.80
894B	1/2, 1/2, 1/2		5½	3/8	.40	.56	.80
894C	¾, 1, 1/2		5½	3/8	.40	.56	.80
894D		1/2, 5/8, 3/4	5½	3/8	.40	.56	.80
894E		1/2, 5/8, 3/4	5½	3/8	.40	.56	.80

DROP FORGED WRENCHES ENGINEERS' WRENCHES

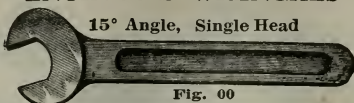


Fig. 00

Wrenches of this style but with handle tapered will be furnished on orders for the larger sizes, beginning with No. 11. The following semi-finished and finished wrenches have hole in end of handle.

No. Hole	17 5/8	18 3/4	19 7/8	19A 7/8	20 1	20A 1	21A 1 1/8	21B 1 1/8	21C 1 1/8	22A 1 1/4	22B 1 1/4
No.	For U. S. Standard Nut Size Bolt	Opening Milled	Extreme Length Approx.	Thickness Head	Price						
					Unfinished	Semi-finished	Finished				
00	1/8	5/16	3	3/8	\$0.09	\$0.14	\$0.22				
0	1/8	5/16	3 1/2	3/8	.10	.15	.25				
1	1/8	5/16	4	3/8	.12	.18	.28				
2	1/8	5/16	4 3/4	3/8	.15	.22	.32				
3	1/8	5/16	5	3/8	.18	.26	.38				
4	1/8	5/16	6 1/2	3/8	.22	.32	.45				
5	1/8	5/16	7 1/2	3/8	.26	.38	.54				
6	1/8	5/16	8 3/4	3/8	.31	.46	.65				
7	1/8	5/16	9 1/4	3/8	.40	.57	.82				
8	1/8	5/16	11 1/8	3/8	.55	.75	1.05				
9	1/8	5/16	13	3/8	.85	1.15	1.52				
10	1 1/8	1 1/8	14 3/4	3/8	1.20	1.60	2.10				
11	1 1/8	1 1/8	16 1/2	3/8	1.65	2.10	2.80				
12	1 1/8	1 1/8	18 1/2	3/8	2.20	2.85	3.70				
13	1 1/8	1 1/8	20	3/8	2.80	3.65	4.70				
14	1 1/8	1 1/8	22	1 1/8	3.45	4.60	5.80				
15	1 1/8	1 1/8	24	1 1/8	4.15	5.60	7.10				
16	1 1/8	1 1/8	25 1/2	1 1/8	4.90	6.70	8.50				
16A	1 1/8	1 1/8	27	1 1/8	4.90	6.70	8.50				
17	2 1/8	2 1/8	29 1/2	1 1/8	7.50	10.25	13.00				
18	2 1/8	2 1/8	33	1 1/8	11.50	14.75	18.00				
19	2 1/8	2 1/8	37	1 1/8	17.00	21.00	25.00				
19A	2 1/8	2 1/8	39	1 1/8	17.00	21.00	25.00				
20	3	4 1/8	41	1 7/8	25.00	31.00	37.00				
20A	3 1/4	5 5/8	43	1 7/8	25.00	31.00	37.00				
21A	3 1/2	5 3/4	45	2 1/4	40.00	52.00	64.00				
21B	3 3/4	5 3/4	47	2 1/4	40.00	52.00	64.00				
21C	3 3/4	5 3/4	49	2 1/2	40.00	52.00	64.00				
22A	4 1/2	6 7/8	51	2 3/2	80.00	102.00	124.00				
22B	5	7 5/8	53	3	80.00	102.00	124.00				

ENGINEERS' WRENCHES

15° Angle, Double Head

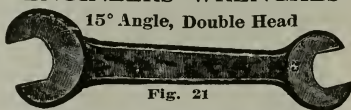


Fig. 21

No.	For U. S. Standard Nut Size Bolt	Openings Milled	Extreme Length	Thickness Heads	Price			No.	For U. S. Standard Nut Size Bolt	Openings Milled	Extreme Length	Thickness Heads	Price		
					Unfinished	Semi-finished	Finished						Unfinished	Semi-finished	Finished
21	1/8	5/16	3 1/2	3/8	\$0.12	\$0.17	\$0.26	44	1 1/8	1 1/8	19	1 1/8	\$2.60	\$3.60	\$4.70
22	1/8	5/16	4	3/8	.14	.21	.32	45	1 1/8	1 1/8	20	1 1/8	2.60	3.60	4.70
23	1/8	5/16	4 3/4	3/8	.14	.21	.32	46	1 1/8	1 1/8	21	1 1/8	3.80	5.25	6.70
24	1/8	5/16	5	3/8	.17	.25	.38	47	1 1/8	1 1/8	22	1 1/8	3.80	5.25	6.70
25	1/8	5/16	6 1/2	3/8	.17	.25	.38	48	1 1/8	1 1/8	23	1 1/8	5.20	7.00	8.80
26	1/8	5/16	7 1/2	3/8	.21	.31	.46	49	1 1/8	1 1/8	24	1 1/8	5.20	7.00	8.80
27	1/8	5/16	8 3/4	3/8	.25	.37	.56	50	1 1/8	1 1/8	25	1 1/8	6.75	9.00	11.25
28	1/8	5/16	9 1/4	3/8	.25	.37	.56	51	1 1/8	1 1/8	26	1 1/8	7.40	9.90	12.40
29	1/8	5/16	11 1/8	3/8	.25	.37	.56	52	1 1/8	1 1/8	27	1 1/8	8.35	11.00	13.65
30	1/8	5/16	13	3/8	.30	.45	.68	53	1 1/8	1 1/8	28	1 1/8	9.00	12.00	15.00
31	1/8	5/16	14 3/4	3/8	.30	.45	.68	54	1 1/8	1 1/8	29	1 1/8	11.00	14.25	17.50
32	1/8	5/16	16 1/2	3/8	.37	.55	.85	55	1 1/8	1 1/8	30	1 1/8	12.00	15.50	19.00
33	1/8	5/16	18 1/2	3/8	.37	.55	.85	56	1 1/8	1 1/8	31	1 1/8	16.00	20.00	24.00
34	1/8	5/16	20	3/8	.46	.68	1.08	57	1 1/8	1 1/8	32	1 1/8	18.50	23.50	28.50
35	1/8	5/16	22	3/8	.46	.68	1.08	57A	1 1/8	1 1/8	33	1 1/8	23.00	28.00	33.00
36	1/8	5/16	24	3/8	.66	.98	1.40	58	2 1/8	2 1/8	34	1 1/8	26.00	31.00	36.00
37	1/8	5/16	25 1/2	3/8	.66	.98	1.40	59	2 1/8	2 1/8	35	1 1/8	26.00	31.00	36.00
38	1/8	5/16	27	3/8	1.00	1.40	1.90	60	2 1/8	2 1/8	36	1 1/8	30.00	37.50	45.00
39	1/8	5/16	29 1/2	3/8	1.00	1.40	1.90	61	2 1/8	2 1/8	37	1 1/8	33.00	47.00	56.00
40	1/8	5/16	31	3/8	1.40	1.90	2.60	62	2 1/8	2 1/8	38	1 1/8	38.00	47.00	56.00
41	1/8	5/16	33	3/8	1.40	1.90	2.60	63	2 1/8	2 1/8	39	1 1/8	55.00	67.50	80.00
42	1/8	5/16	35	3/8	1.90	2.65	3.50	64	3	3	40	1 1/8	55.00	67.50	80.00
43	1/8	5/16	37	3/8	1.90	2.65	3.50				41	1 1/8	75.00	77.50	90.00

DROP FORGED WRENCHES

"S" WRENCHES
WITH FLAT
HANDLE

22½° Angle, Double Head.

Fig. 661A.

For U. S. Standard Nuts

For U. S. Standard Nuts

Fig. 661D

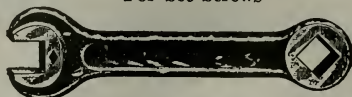
For Hexagon Head Cap Screws

No.	For U. S. Standard Nuts; Size Bolts	Openings Milled	Extreme Length	Thickness Heads	Price		
					Unfinished	Semi-finished	Finished
661A	1/8 & 1/8	7/8 & 1 1/8	4	3/8	\$0.15	\$0.22	\$0.32
661B	1/8 & 1/8	7/8 & 1 1/8	4	3/8	.15	.22	.32
661C	1/8 & 1/8	7/8 & 1 1/8	4	3/8	.15	.22	.32
662A	3/8 & 3/8	1 1/8 & 1 3/8	5	7/8	.20	.29	.42
662B	3/8 & 3/8	1 1/8 & 1 3/8	5	7/8	.20	.29	.42
662C	3/8 & 3/8	1 1/8 & 1 3/8	5	7/8	.20	.29	.42
663A	1/2 & 3/4	1 3/8 & 1 5/8	6 1/4	3/4	.27	.39	.56
663B	1/2 & 3/4	1 3/8 & 1 5/8	6 1/4	3/4	.27	.39	.56
663C	1/2 & 3/4	1 3/8 & 1 5/8	6 1/4	3/4	.27	.39	.56
664A	3/8 & 1/2	1 1/8 & 7/8	7 1/2	7/8	.37	.53	.75
664B	3/8 & 1/2	1 1/8 & 7/8	7 1/2	7/8	.37	.53	.75
664C	3/8 & 1/2	1 1/8 & 7/8	7 1/2	7/8	.37	.53	.75
665A	1/2 & 5/8	7/8 & 1 1/8	9	1 1/2	.50	.72	1.00
665B	1/2 & 5/8	7/8 & 1 1/8	9	1 1/2	.50	.72	1.00
665C	1/2 & 5/8	7/8 & 1 1/8	9	1 1/2	.50	.72	1.00
666A	5/8 & 3/4	1 1/8 & 1 1/4	10 1/2	1 1/2	.74	1.00	1.35
666B	5/8 & 3/4	1 1/8 & 1 1/4	10 1/2	1 1/2	.74	1.00	1.35
666C	5/8 & 3/4	1 1/8 & 1 1/4	10 1/2	1 1/2	.74	1.00	1.35
667A	3/4 & 7/8	1 1/4 & 1 7/8	12	5/8	1.10	1.45	1.90
667B	3/4 & 7/8	1 1/4 & 1 7/8	12	5/8	1.10	1.45	1.90
667C	3/4 & 7/8	1 1/4 & 1 7/8	12	5/8	1.10	1.45	1.90
668A	7/8 & 1 1/8	1 7/8 & 1 13/8	14	3/4	1.90	2.50	3.20
668B	1 & 1 1/8	1 5/8 & 1 13/8	14	3/4	1.90	2.50	3.20
668C	1 & 1 1/8	1 5/8 & 2	14	3/4	1.90	2.50	3.20

Fig. 661D FOR HEXAGON HEAD CAP SCREWS

No.	For Hexagon Head Cap Screws; Diameter Screws	Openings Milled	Extreme Length	Thickness Heads	Price		
					Unfinished	Semi-finished	Finished
661D	1/8 & 1/8	7/8 & 1 1/8	4	3/8	\$0.15	\$0.22	\$0.32
661E	1/8 & 1/8	7/8 & 1 1/8	4	3/8	.15	.22	.32
661F	1/8 & 1/8	7/8 & 1 1/8	4	3/8	.15	.22	.32
661G	1/8 & 1/8	7/8 & 1 1/8	4	3/8	.15	.22	.32
662D	1/4 & 5/8	1 1/8 & 1 3/8	5	7/8	.20	.29	.42
662E	1/4 & 5/8	1 1/8 & 1 3/8	5	7/8	.20	.29	.42
662F	1/4 & 5/8	1 1/8 & 1 3/8	5	7/8	.20	.29	.42
662G	1/4 & 5/8	1 1/8 & 1 3/8	5	7/8	.20	.29	.42
663D	3/8 & 1/2	1 1/8 & 5/8	6 1/4	3/4	.27	.39	.56
663E	3/8 & 1/2	1 1/8 & 5/8	6 1/4	3/4	.27	.39	.56
663F	3/8 & 1/2	1 1/8 & 5/8	6 1/4	3/4	.27	.39	.56
663G	3/8 & 1/2	1 1/8 & 5/8	6 1/4	3/4	.27	.39	.56
664D	1/2 & 3/4	1 3/8 & 1 5/8	7 1/2	7/8	.37	.53	.75
664E	1/2 & 3/4	1 3/8 & 1 5/8	7 1/2	7/8	.37	.53	.75
664F	1/2 & 3/4	1 3/8 & 1 5/8	7 1/2	7/8	.37	.53	.75
665D	5/8 & 3/4	1 1/8 & 1 1/4	9	1 1/2	.50	.72	1.00
665E	5/8 & 3/4	1 1/8 & 1 1/4	9	1 1/2	.50	.72	1.00
665F	5/8 & 3/4	1 1/8 & 1 1/4	9	1 1/2	.50	.72	1.00
665G	5/8 & 3/4	1 1/8 & 1 1/4	9	1 1/2	.50	.72	1.00
666D	3/4 & 1	1 1/4 & 1 1/4	10 1/2	1 1/2	.74	1.00	1.35
666E	3/4 & 1	1 1/4 & 1 1/4	10 1/2	1 1/2	.74	1.00	1.35
666F	3/4 & 1	1 1/4 & 1 1/4	10 1/2	1 1/2	.74	1.00	1.35
667D	1 & 1 1/8	1 1/4 & 1 3/8	12	5/8	1.10	1.45	1.90
667E	1 & 1 1/8	1 1/4 & 1 3/8	12	5/8	1.10	1.45	1.90
667F	1 & 1 1/8	1 1/4 & 1 3/8	12	5/8	1.10	1.45	1.90

DROP FORGED WRENCHES DOUBLE HEAD TOOL POST WRENCHES For Set Screws



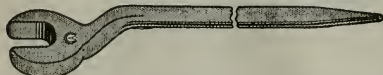
These wrenches are equally adaptable for use on Cap Screws.

No.	Open End for Set Screw Size	Closed End for Set Screw Size	Extreme Length	Thickness Heads	Price		
					Unfinished	Semi-finished	Finished
554	$\frac{1}{8}$	$\frac{1}{8}$	5½	$\frac{1}{2}$ & $\frac{1}{2}$	\$0.40	\$0.56	\$0.80
555	$\frac{1}{2}$	$\frac{1}{2}$	6	$\frac{1}{2}$ & $\frac{1}{2}$	.44	.62	.88
555B	$\frac{1}{2}$	$\frac{1}{2}$	6	$\frac{1}{2}$ & $\frac{1}{2}$	.44	.62	.88
555C	$\frac{1}{2}$	$\frac{1}{2}$	6	$\frac{1}{2}$ & $\frac{1}{2}$	.44	.62	.88
556	$\frac{1}{2}$	$\frac{1}{2}$	7	$\frac{1}{2}$ & $\frac{1}{2}$	.52	.72	1.00
556B	$\frac{1}{2}$	$\frac{1}{2}$	7	$\frac{1}{2}$ & $\frac{1}{2}$	.52	.72	1.00
556C	$\frac{1}{2}$	$\frac{1}{2}$	7	$\frac{1}{2}$ & $\frac{1}{2}$	.52	.72	1.00
557	$\frac{3}{4}$	$\frac{3}{4}$	7½	$\frac{1}{2}$ & $\frac{1}{2}$	.60	.82	1.16

FOR U. S. STANDARD NUTS AND SET SCREWS

No.	Open End for U. S. Standard Nut		Closed End for Set Screw Size	Extreme Length	Thickness Heads	Price		
	Size Bolt	Opening Milled				Unfinished	Semi-finished	Finished
562	$\frac{3}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	6½	$\frac{1}{2}$ & $\frac{5}{8}$	\$0.48	\$0.66	\$0.96
563	$\frac{1}{2}$	$\frac{1}{8}$	$\frac{1}{8}$	7	$\frac{1}{2}$ & $\frac{5}{8}$	.52	.72	1.04
563B	$\frac{1}{2}$	$\frac{1}{8}$	$\frac{1}{8}$	7	$\frac{1}{2}$ & $\frac{5}{8}$	.52	.72	1.04
563C	$\frac{1}{2}$	$\frac{1}{8}$	$\frac{1}{8}$	7	$\frac{1}{2}$ & $\frac{5}{8}$	.52	.72	1.04
563D	$\frac{1}{2}$	$\frac{1}{8}$	$\frac{1}{8}$	7	$\frac{1}{2}$ & $\frac{5}{8}$	.52	.72	1.04
564	$\frac{5}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	7½	$\frac{1}{2}$ & $\frac{5}{8}$	.60	.82	1.16
565	$\frac{3}{4}$	$\frac{1}{8}$	$\frac{3}{8}$	9½	$\frac{3}{4}$ & $\frac{1}{2}$	.90	1.20	1.60
566	$\frac{3}{4}$	$\frac{1}{8}$	$\frac{3}{8}$	9½	$\frac{3}{4}$ & $\frac{1}{2}$	.90	1.20	1.60
566B	$\frac{3}{4}$	$\frac{1}{8}$	$\frac{3}{8}$	9½	$\frac{3}{4}$ & $\frac{1}{2}$	.90	1.20	1.60
567	$\frac{3}{4}$	$\frac{1}{4}$	1	10	$\frac{3}{4}$ & $\frac{1}{2}$	1.25	1.60	2.00
567B	$\frac{3}{4}$	$\frac{1}{4}$	$\frac{1}{8}$	10	$\frac{3}{4}$ & $\frac{1}{2}$	1.25	1.60	2.00
567C	$\frac{3}{4}$	$\frac{1}{4}$	1	10	$\frac{3}{4}$ & $\frac{1}{2}$	1.25	1.60	2.00
568	1	$\frac{1}{8}$	$\frac{1}{8}$	11	$\frac{3}{4}$ & $\frac{1}{2}$	1.80	2.20	2.70
568B	1	$\frac{1}{8}$	$\frac{1}{8}$	11	$\frac{3}{4}$ & $\frac{1}{2}$	1.80	2.20	2.70
568C	$\frac{1}{2}$	$\frac{1}{8}$	1	11	$\frac{3}{4}$ & $\frac{1}{2}$	1.80	2.20	2.70
568D	$\frac{1}{2}$	2	1	11	$\frac{3}{4}$ & $\frac{1}{2}$	1.80	2.20	2.70

STRUCTURAL WRENCHES Straight Opening



The tang is for bringing bolt-holes into line and for insertion into convenient openings when wrench is not in use, preventing loss and keeping tool in sight.

The offset in handle provides for clearance of obstructions and safety for the hands of operator.

Unfinished are milled only.
Semi-finished are milled, case-hardened all over; heads not ground.

In stock for U. S. standard nuts.

No.	For U. S. Standard Nut Size Bolt	Opening	Extreme Length	Thickness Heads	Handle Offset	Price	
						Un-finished	Semi-finished
901	$\frac{1}{4}$	$\frac{1}{8}$	8	$\frac{3}{4}$	$\frac{1}{8}$	\$0.33	\$0.40
902	$\frac{1}{2}$	$\frac{1}{8}$	8	$\frac{3}{4}$	$\frac{1}{8}$	.33	.40
903	$\frac{3}{8}$	$\frac{1}{8}$	9½	$\frac{3}{4}$	$\frac{1}{8}$	.40	.52
904	$\frac{1}{2}$	$\frac{1}{8}$	9½	$\frac{3}{4}$	$\frac{1}{8}$	.40	.52
905	$\frac{3}{8}$	$\frac{1}{8}$	11	$\frac{3}{4}$	1	.52	.70
906	$\frac{1}{2}$	$\frac{1}{8}$	11	$\frac{3}{4}$	1	.52	.70
907	$\frac{3}{8}$	$\frac{1}{8}$	13	$\frac{3}{4}$	$\frac{1}{4}$	1.74	.98
908	$\frac{1}{2}$	$\frac{1}{8}$	15	$\frac{3}{4}$	$\frac{1}{4}$	1.02	1.34
909	$\frac{3}{8}$	$\frac{1}{8}$	17	$\frac{3}{4}$	$\frac{1}{4}$	1.40	1.80
910	1	$\frac{1}{8}$	19	$\frac{3}{4}$	$\frac{1}{4}$	1.90	2.50

CONSTRUCTION WRENCHES 15° Angle



The tang is for bringing bolt-holes into line and for insertion into convenient openings when wrench is not in use, preventing loss and keeping tool in sight.

Unfinished are milled only.
Semi-finished are milled, case-hardened all over; heads not ground.

In stock for U. S. standard nuts.

No.	For U. S. Standard Nut Size Bolt	Opening	Extreme Length	Thickness Heads	Price	
					Un-finished	Semi-finished
201	$\frac{1}{4}$	$\frac{1}{8}$	8	$\frac{3}{4}$	\$0.28	\$0.35
202	$\frac{1}{2}$	$\frac{1}{8}$	8	$\frac{3}{4}$	.28	.35
203	$\frac{3}{8}$	$\frac{1}{8}$	9½	$\frac{3}{4}$	.35	.45
204	$\frac{1}{2}$	$\frac{1}{8}$	9½	$\frac{3}{4}$	.35	.45
205	$\frac{3}{8}$	$\frac{1}{8}$	11	$\frac{3}{4}$	.45	.58
206	$\frac{1}{2}$	$\frac{1}{8}$	11	$\frac{3}{4}$	.45	.58
207	$\frac{3}{8}$	$\frac{1}{8}$	13	$\frac{3}{4}$	.62	.80
208	$\frac{1}{2}$	$\frac{1}{8}$	15	$\frac{3}{4}$	.86	1.10
209	$\frac{3}{8}$	$\frac{1}{8}$	17	$\frac{3}{4}$	1.18	1.50
210	1	$\frac{1}{8}$	19	$\frac{3}{4}$	1.60	2.10
211	$\frac{1}{2}$	$\frac{1}{8}$	21	$\frac{3}{4}$	2.20	3.00
212	$\frac{1}{2}$	2	21	$\frac{3}{4}$	2.20	3.00

FOR MACHINE BOLTS AND RIVETS, SEE INDEX

DROP FORGED WRENCHES

DOUBLE HEAD SOCKET
WRENCHES

With or Without Handle
For Hexagon Nuts and Cap Screws

Unfinished are broached only.

Semi-finished are broached, edges ground and case-hardened all over.

Finished are broached, polished all over, case-hardened and lacquered.



Fig. 350N



Fig. 350N

Number	Hexagon Openings			Extreme Length	Diameter of Head	Diameter of Shank	Hex. Parts of Shank same size as U. S. Nut; for Size Bolt	Size of Pin-Handle		Price					
	For U. S. Standard Nuts Size Bolts	For Cap Screws Diameter Screws	Broached Openings					Without Pin-Handle and Hole	With Pin-Handle and Hole	Unfin-ished		Semi-finished		Finished	
										Without Pin-Handle or Hole	With Pin-Handle and Hole	Without Pin-Handle or Hole	With Pin Handle and Hole	Without Pin-Handle or Hole	With Pin-Handle and Hole
340A	1/4" & 5/16"	7/16" & 1/2"	1/4" & 5/16"	4 7/8"	1 1/4" & 1 1/8"	3/8"	1/4"	5/16"	4 1/2"	\$0.35	\$0.46	\$0.53	\$0.64	\$0.70	\$0.81
342A	1/2" & 5/8"	3/4" & 7/8"	1/2" & 5/8"	6 1/4"	1 1/2" & 1 1/4"	1/2"	5/16"	5/8"	5 1/8"	.45	.58	.68	.81	.90	1.03
342B	5/8" & 3/4"	7/8" & 1"	5/8" & 3/4"							.45	.58	.68	.81	.90	1.03
342C	3/4" & 7/8"	1" & 1 1/8"	3/4" & 7/8"							.45	.58	.68	.81	.90	1.03
342D	7/8" & 1"	1 1/8" & 1 1/4"	7/8" & 1"							.45	.58	.68	.81	.90	1.03
342E	1" & 1 1/8"	1 1/4" & 1 1/2"	1" & 1 1/8"							.45	.58	.68	.81	.90	1.03
342H	1 1/8" & 1 1/4"	1 1/2" & 1 3/4"	1 1/8" & 1 1/4"							.45	.58	.68	.81	.90	1.03
342I	1 1/4" & 1 1/2"	1 3/4" & 2"	1 1/4" & 1 1/2"							.45	.58	.68	.81	.90	1.03
342J	1 1/2" & 1 3/4"	2" & 2 1/8"	1 1/2" & 1 3/4"							.45	.58	.68	.81	.90	1.03
342K	1 3/4" & 2"	2 1/8" & 2 1/4"	1 3/4" & 2"							.45	.58	.68	.81	.90	1.03
344A	1/4" & 5/16"	7/16" & 1/2"	1/4" & 5/16"	7 3/4"	1 1/4" & 1 1/8"	3/8"	1/4"	3 1/2"	6 3/4"	.65	.82	.97	1.14	1.30	1.47
344B	5/16" & 3/8"	1/2" & 5/8"	5/16" & 3/8"							.65	.82	.97	1.14	1.30	1.47
344C	3/8" & 1/2"	5/8" & 3/4"	3/8" & 1/2"							.65	.82	.97	1.14	1.30	1.47
344D	1/2" & 5/8"	3/4" & 1"	1/2" & 5/8"							.65	.82	.97	1.14	1.30	1.47
344E	5/8" & 3/4"	1" & 1 1/8"	5/8" & 3/4"							.65	.82	.97	1.14	1.30	1.47
344F	3/4" & 1"	1 1/8" & 1 1/4"	3/4" & 1"							.65	.82	.97	1.14	1.30	1.47
344J	1" & 1 1/8"	1 1/4" & 1 1/2"	1" & 1 1/8"							.65	.82	.97	1.14	1.30	1.47
344K	1 1/8" & 1 1/4"	1 1/2" & 1 3/4"	1 1/8" & 1 1/4"							.65	.82	.97	1.14	1.30	1.47
344V	1 1/4" & 1 1/2"	1 3/4" & 2"	1 1/4" & 1 1/2"							.65	.82	.97	1.14	1.30	1.47
344L	1 1/2" & 1 3/4"	2" & 2 1/8"	1 1/2" & 1 3/4"							.65	.82	.97	1.14	1.30	1.47
344M	1 3/4" & 2"	2 1/8" & 2 1/4"	1 3/4" & 2"							.65	.82	.97	1.14	1.30	1.47
344N	2" & 2 1/8"	2 1/4" & 2 1/2"	2" & 2 1/8"							.65	.82	.97	1.14	1.30	1.47
344O	2 1/8" & 2 1/4"	2 1/2" & 2 3/4"	2 1/8" & 2 1/4"							.65	.82	.97	1.14	1.30	1.47
346A	1/2" & 5/8"	3/4" & 1"	1/2" & 5/8"	9 1/4"	1 1/2" & 1 1/4"	3/4"	5/16"	1/2"	8 1/4"	.95	1.15	1.43	1.63	1.90	2.10
346B	5/8" & 3/4"	1" & 1 1/8"	5/8" & 3/4"							.95	1.15	1.43	1.63	1.90	2.10
346C	3/4" & 1"	1 1/8" & 1 1/4"	3/4" & 1"							.95	1.15	1.43	1.63	1.90	2.10
346D	1" & 1 1/8"	1 1/4" & 1 1/2"	1" & 1 1/8"							.95	1.15	1.43	1.63	1.90	2.10
346E	1 1/8" & 1 1/4"	1 1/2" & 1 3/4"	1 1/8" & 1 1/4"							.95	1.15	1.43	1.63	1.90	2.10
346F	1 1/4" & 1 1/2"	1 3/4" & 2"	1 1/4" & 1 1/2"							.95	1.15	1.43	1.63	1.90	2.10
346M	1 1/2" & 1 3/4"	2" & 2 1/8"	1 1/2" & 1 3/4"							.95	1.15	1.43	1.63	1.90	2.10
346N	1 3/4" & 2"	2 1/8" & 2 1/4"	1 3/4" & 2"							.95	1.15	1.43	1.63	1.90	2.10
346O	2" & 2 1/8"	2 1/4" & 2 1/2"	2" & 2 1/8"							.95	1.15	1.43	1.63	1.90	2.10
346P	2 1/8" & 2 1/4"	2 1/2" & 2 3/4"	2 1/8" & 2 1/4"							.95	1.15	1.43	1.63	1.90	2.10
348A	3/8" & 1/2"	1/2" & 5/8"	3/8" & 1/2"	11	1 1/2" & 1 1/4"	1	7/8"	1 1/2"	9 1/2"	1.60	1.95	2.40	2.75	3.20	3.55
348B	1/2" & 5/8"	5/8" & 3/4"	1/2" & 5/8"							1.60	1.95	2.40	2.75	3.20	3.55
348C	5/8" & 3/4"	3/4" & 1"	5/8" & 3/4"							1.60	1.95	2.40	2.75	3.20	3.55
348D	3/4" & 1"	1" & 1 1/8"	3/4" & 1"							1.60	1.95	2.40	2.75	3.20	3.55
348K	1" & 1 1/8"	1 1/4" & 1 1/2"	1" & 1 1/8"							1.60	1.95	2.40	2.75	3.20	3.55
348L	1 1/8" & 1 1/4"	1 1/2" & 1 3/4"	1 1/8" & 1 1/4"							1.60	1.95	2.40	2.75	3.20	3.55
348M	1 1/4" & 1 1/2"	1 3/4" & 2"	1 1/4" & 1 1/2"							1.60	1.95	2.40	2.75	3.20	3.55
348N	1 1/2" & 1 3/4"	2" & 2 1/8"	1 1/2" & 1 3/4"							1.60	1.95	2.40	2.75	3.20	3.55
350A	3/4" & 1"	1" & 1 1/8"	3/4" & 1"	13 1/4"	2 1/2" & 2 1/4"	1 1/4"	1 1/4"	7/8"	11 7/8"	2.80	3.30	4.20	4.70	5.60	6.10
350B	1" & 1 1/8"	1 1/4" & 1 1/2"	1" & 1 1/8"							2.80	3.30	4.20	4.70	5.60	6.10
350C	1 1/8" & 1 1/4"	1 1/2" & 1 3/4"	1 1/8" & 1 1/4"							2.80	3.30	4.20	4.70	5.60	6.10
350D	1 1/4" & 1 1/2"	1 3/4" & 2"	1 1/4" & 1 1/2"							2.80	3.30	4.20	4.70	5.60	6.10
350E	1 1/2" & 1 3/4"	2" & 2 1/8"	1 1/2" & 1 3/4"							2.80	3.30	4.20	4.70	5.60	6.10
350L	1 3/4" & 2"	2 1/8" & 2 1/4"	1 3/4" & 2"							2.80	3.30	4.20	4.70	5.60	6.10
350M	2" & 2 1/8"	2 1/4" & 2 1/2"	2" & 2 1/8"							2.80	3.30	4.20	4.70	5.60	6.10
350N	2 1/8" & 2 1/4"	2 1/2" & 2 3/4"	2 1/8" & 2 1/4"							2.80	3.30	4.20	4.70	5.60	6.10

MISCELLANEOUS DROP FORGED WRENCHES

LONG ROUND HANDLE WRENCHES
Straight Opening

Fig. 193

Unfinished are broached or milled.

Semi-Finished are broached or milled and case-hardened all over; heads not ground. Length of handle can be varied, if desired.

Number	For U. S. Standard Nuts Size Bolt	Openings	Extreme Length inches	PRICE	
				Unfinished	Semi-finished
193	$\frac{5}{8}$	$1\frac{1}{8}$	24	\$1.10	\$1.60
194	$\frac{3}{4}$	$1\frac{5}{16}$	24	1.10	1.60
195		$1\frac{7}{16}$	24	1.10	1.60
196A	$\frac{7}{8}$	$1\frac{1}{2}$	27	1.50	2.10
196		$1\frac{9}{16}$	27	1.50	2.10
197	1	$1\frac{11}{16}$	27	1.50	2.10
198		$1\frac{13}{16}$	30	3.00	3.80
199A	$1\frac{1}{8}$	$1\frac{7}{8}$	30	3.00	3.80
199		$1\frac{15}{16}$	30	3.00	3.80



Fig. 645

RATCHET HEAD REVERSE BRAKE PEDAL
SPRING WRENCH

Not necessary to take wrench off until you have finished tightening.

Price, each.....\$0.54



Fig. 630

CYLINDER HEAD WRENCH

Price, each.....\$0.28



Fig. 641

REVERSE BRAKE PEDAL TENSION SPRING
WRENCH. Double End.

Price, each.....\$0.18



Fig. 623

No. 623. CONNECTING ROD WRENCH.

Fits the No. 4 Connecting Rod. Saves much time.

Price, each.....\$0.30



Fig. 701

W. R. S. FIRE PLUG SPANNER WRENCH

Drop forged spanner. Fits any size fire plug, or any style cap. Also arranged to fit any size coupling on fire hose. This wrench is used by the fire departments of practically every large city in the country.

Price, each.....\$1.50

ALL STEEL TOOL KITS



Standard Kit



Standard Kit Open



Standard Kit with Tray

For Electricians, Mechanics, Railroad Men, Construction Men, Line Men, Meter Men, etc.

These Kits are made of prepared steel, but are no heavier than other bags and tool kits.

They are built to stand the wear and tear of hardest usage. Re-enforced throughout, fitted with brass side catches, strong two-tumbler Yale locks, steel leather-covered handles and riveted so that they cannot pull out. Protected by solid brass corner irons.

Finished in a three-coated baked enamel of brown or black, they present an appearance neat and attractive and look like leather traveling bags. Invisible hinges give smooth carrying surface.

Material, special construction and overlapping features make Kennedy Kits wearproof, waterproof and weatherproof. These Kits are also thief-proof, because they can be locked, chained and cannot be cut open.

Heavy material can be carried without buckling or changing shape of bag. Tray very handy for carrying drills, bits, screws, small parts, etc. Tray, $1\frac{3}{4}$ inches deep.

Double formed, double seamed, electrically welded and re-enforced.

STANDARD KITS
(Patents Pending)

	Length	Width	Height	Net Wt. Lbs.	Price Each
Style XT	14	7	9	$5\frac{1}{4}$	\$3.85
Style DDT	16	9	11	$6\frac{1}{4}$	4.10
Style DT	18	10	13	$7\frac{3}{8}$	4.35
Style ET	20	11	13	8	4.60
Style FT	22	11	13	$11\frac{1}{4}$	4.85

Furnished without tray if desired, at 35 cents less, each size.

ELECTRICIANS' CASES

These cases are designed for and meet all the requirements of an electrician's tool kit. They have the necessary length, together with compactness and proper spacing for carrying the average equipment. They have a divided spacing at one end for blow-torch and ledge rests at top of grip for tray to carry drills, bits, small parts, etc., if desired. They have ample space at bottom for heavy tools, material, etc. In addition to leather handle, they are fitted with loops at each end for straps to pass under the case and over the shoulder for carrying heavy loads in this manner if desired. Furnished without tray at 35 cents less, each size.

Electrician's Case
with Tray

	Length	Width	Height	Net Wt. Lbs.	Price Each
Style ENT	19	8	9	$7\frac{1}{4}$	\$4.00
Style EOT	21	8	9	$8\frac{1}{2}$	4.25
Style EHT	$24\frac{1}{2}$	6	9	$8\frac{1}{4}$	4.50

FOR COMPLETE LINE OF TOOLS FOR ABOVE CASES, SEE INDEX



MASON BAGS

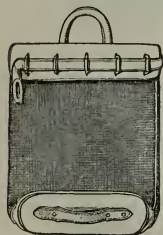
Made of one piece of heavy 18 oz. white duck extending around bottom, viz., a ONE-PIECE BAG. Bottom two thicknesses of No. 6 Duck with heavy straw-board filling. All sewing by LOCK STITCH machine so it cannot rip unless every stitch is cut. Each bag has lock and key. DOUBLE 12 gauge steel frame riveted to body of bag, which will outwear any manner of sewing. Sides are connected with genuine leather welt. Bottoms supplied with five steel studs.

Length	Depth	Width	With Pockets, per doz.	Without Pockets per doz.
16	15 ½	5 ½	\$16.80	\$16.20
18	15 ½	5 ½	18.00	17.40
20	15 ½	5 ½	19.20	18.60
22	15 ½	5 ½	21.60	21.00
24	17 ½	5 ½	22.20	21.60

MECHANICS' TOOL SATCHELS

Same grade and make as Masons, has heavy grain leather on bottom and 5 inches on sides.

Length, inches	Width, inches	Depth	Per Dozen
16	4 ½	15	\$33.00
18	4 ½	15	36.00
20	4 ½	17	38.00
22	6 ½	17	42.00
24	6 ½	17	45.00



MAIL BAGS

Body 18 oz. brown or white duck. Leather bottom and sides. Leather top fitted with strap and oblong grommets.

No.	Length, inches	Price each
1	16x24	\$5.00
2	18x24	5.75
3	20x26	6.50
4	20x30	7.00
5	22x36	8.00

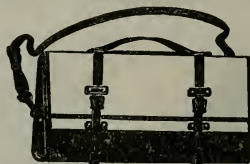
TOOL BAGS



Plumbers'

Made of carpet, with leather trimming 3 ½ inches wide on sides and bottom, bag being 16 inches by 25 inches in size. Two 1 ¼ inch leather straps, with suitable buckles, passing through leather loops. Heavy duck lining. Top bound for ¾ inch with leather.

Each \$3.30



Steam Fitters'

Made of high-grade carpet, with leather trimming 3 ½ inches wide on bottom. Heavy leather hand-sewed gusset tapering from ½ inch at top to 4 inches at bottom. Leather binding ¾ inch around gusset and top. Two 1 inch leather straps, with suitable buckles, passing through leather loops. Shoulder strap 1 inch, with snaps for attaching and buckle for adjusting. Solid harness-leather handle. Bag 12 inches by 24 inches in size.

Each \$3.75

FOR TOOLS FOR ABOVE BAGS, SEE INDEX

COMPLETE WATER GAUGES

Penberthy Water Gauges listed on page 457



Fig. 447A
No. 3



Fig. 447B
No. 9



Fig. 447C
No. 16



Fig. 447D
No. 612

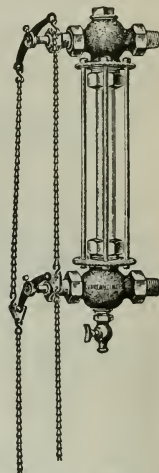


Fig. 447E
Lunkenheimer
Quick Closing

- | | | | |
|---|---|--|--|
| With Two Rods | With Two Rods | With Four Guards | With Four Guards |
| No. 3. Iron wheel, glass $\frac{5}{8}$ x 12 in., pipe $\frac{1}{2}$ in. each \$ 3.25 | No. 9. Wood wheel, glass $\frac{5}{8}$ x 12 in., pipe $\frac{1}{2}$ in. " 4.25 | No. 16. Wood wheel, glass $\frac{5}{8}$ x 12 in., pipe $\frac{1}{2}$ in. " 6.00 | No. 612. Wood wheel, glass $\frac{3}{4}$ x 16 in., pipe $\frac{3}{4}$ in. " 10.00 |
- No. 3 is so constructed that by removing top cap a new glass can be put in while under steam pressure.

Fig. 447E. LUNKENHEIMER QUICK CLOSING WATER GAUGE

Part finished, three-rod, each:

$\frac{1}{2}$ -in. glass, $\frac{1}{2}$ -in. pipe, \$10.50; $\frac{5}{8}$ -in. glass, $\frac{1}{2}$ -in. pipe, \$11.50; $\frac{3}{4}$ -in. glass, $\frac{3}{4}$ -in. pipe, \$13.50

All finished, three-rod, each:

$\frac{1}{2}$ -in. glass, $\frac{1}{2}$ -in. pipe, \$13.00; $\frac{5}{8}$ -in. glass, $\frac{1}{2}$ -in. pipe, \$14.00; $\frac{3}{4}$ -in. glass, $\frac{3}{4}$ -in. pipe, \$16.50

CHESTERTON'S GAUGE GLASS CUTTERS

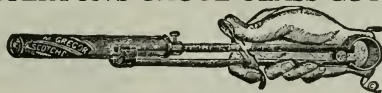


Fig. 447F

Each \$2.00

THE CHICAGO GAUGE GLASS CUTTER



Fig. 447G

This is a high grade cutter of an old and standard type. The beam is graduated and the tool nickel plated. The cutter wheels are first quality—sharp and tough.

LIST PRICE

- | | | |
|---------------|----------|---------|
| No. 1-C | each | \$ 0.60 |
| No. 1-C | per doz. | 5.00 |
| No. 1-C | each | 57.00 |

THE WILKINS GAUGE GLASS CUTTER

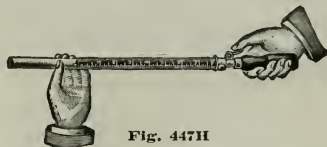


Fig. 447H

Cuts easily and quickly any length from $\frac{1}{4}$ -inch to 30 inches.

A slight pressure on thumb latch does the work.

The Beam is accurately graduated in eighths of an inch up to 8 inches.

The cutter wheels are the best that can be made. Every one is ground sharp and tested.

The Tool is nickel plated. The handle has hard rubber finish.

Packed one in a box with one extra cutter wheel.

- | | |
|---|--------|
| No. 0. Cuts to 8-in. length, (for small tubes) | \$2.00 |
| No. 1. Cuts to 8-in. lengths (regular tubes) | 2.00 |
| No. 2. Cuts to 18-in. lengths (regular tubes) | 6.00 |
| No. 3. Cuts to 24-in. lengths (regular tubes) | 8.00 |
| No. 4. Cuts to 30-in. lengths (regular tubes) | 10.00 |
| No. 5. Cuts to 60 centimeters (Metric graduation) | 10.00 |

FOR GAUGE AND WATER GLASSES, SEE INDEX

WATER GAUGE GLASSES

SCOTCH WATER GAUGE GLASSES

We carry in stock for immediate delivery all the lengths and sizes of gauge glasses shown both in regular and high pressure.



Fig. 447I

Length inches	List per Dozen. External Diameter				Length inches	List per Dozen. External Diameter			
	½ and ¾	¾	¾	1 inch		½ and ¾	¾	¾	1 inch
10	\$3.00	\$3.60	\$5.04	\$6.12	19	\$5.64	\$7.08	\$9.60	\$11.52
11	3.24	3.96	5.64	6.72	20	6.00	7.44	10.20	12.12
12	3.60	4.32	6.12	7.32	22	6.60	8.16	11.16	13.44
13	3.84	4.80	6.60	7.92	24	7.20	8.88	12.12	14.64
14	4.20	5.16	7.08	8.52	30	9.00	11.16	15.24	18.24
15	4.44	5.52	7.56	9.12	36	10.80	13.44	18.24	21.96
16	4.80	5.88	8.16	9.72	48	14.52	18.00	24.36	29.16
17	5.04	6.24	8.64	10.32	60	18.12	22.56	30.48	36.48
18	5.40	6.60	9.12	10.92	72	21.84	27.12	36.48	43.80

Lengths not regular, charged the price of next longer tubes of same diameter.

COMPOUND HIGH PRESSURE GAUGE GLASSES



Fig. 447J

For Highest Steam Pressures and Temperatures

Will not break when subjected to drafts or other sudden changes of temperature. Eliminates danger of scalding or other accidents, delays, etc., due to breaking glasses.

The frequent breaking of the common gauge glass is a source of not only annoyance but at times of great danger to the engineer or boiler attendant. This trouble is avoided in these Gauge Glasses by drawing two glass tubes, of different degrees of expansibility, one over the other. The whole is then fused into a solid tube. This construction gives the highest resistance to the sudden changes of temperature and the solvent action of hot water.

The glass inside the tube expands in proportion to the temperature of the steam or hot water, and the outside tubing contracts according to the temperature of the cold air.

These glasses are unbreakable from natural causes. They are not affected by a drop of water, a flake of snow, or a sudden draft of cold air coming in contact with the glass while it is hot. The great importance of this will be appreciated by every engineer. After a trial of this glass no man would take any chances by using any other.

The resistance offered by this glass to sudden changes of temperature is so great that a glass may be heated to 450° temperature Fahr., and will not break when dropped vertically into cold water.

PRICE LIST, PER DOZEN

Length inches	½ and ¾	¾	¾	1	Length inches	½ and ¾	¾	¾	1
10	\$5.00	\$7.00	\$8.00	\$10.40	19	\$9.00	\$13.00	\$15.00	\$20.00
11	5.40	7.40	8.60	11.20	20	9.00	14.00	16.40	21.40
12	6.00	8.40	10.00	12.40	22	11.00	14.80	17.20	22.40
13	6.40	9.00	10.60	13.60	24	12.00	16.80	20.00	24.80
14	6.60	9.60	11.00	14.80	30	14.00	20.00	23.40	31.20
15	7.00	10.00	11.80	15.60	36	17.20	24.40	28.40	38.00
16	7.80	11.40	12.60	17.00	48	23.40	34.20	37.80	51.00
17	8.00	11.80	13.40	18.00	60	28.00	40.00	47.20	62.40
18	8.60	12.20	14.20	19.00	72	34.40	48.80	56.80	76.00

FOR COMPRESSION GAUGE COCKS, SEE INDEX

FLUE CLEANERS AND BOILER ROOM TOOLS

RUGGLES PERFECTION FLUE CLEANER



Fig. 457A

Be sure and run rod through large hole in rear end of cleaner and screw into the other end.

2 inch and smaller.....	each	\$2.00
2 1/2 inch to 4 inch.....	per inch	1.00
4 1/2 inch.....	each	5.00
5 inch.....	"	5.00
6 inch.....	"	7.00

THE "INGALLS" SELF-ADJUSTING TUBE SCRAPER



Fig. 457B

The spring acts equally on each scraping arm and is protected from the heat and dirt. The scraping edges are chilled and are more durable than steel.

Sizes: 1 1/2, 2, 2 1/4, 2 1/2, 2 3/4, 3, 3 1/4, 3 1/2, 3 3/4, 4 and 4 1/2 inch. Per inch.....\$1.00

THE ENGINEERS' FAVORITE FLUE CLEANER



Fig. 457C

Size, inches.....	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Price, each.....	\$2.00	2.00	2.00	2.25	2.50	2.75	3.00
Size, inches.....	3 1/4	3 1/2	3 3/4	4	4 1/2	5	6
Price, each.....	\$3.25	3.50	3.75	4.00	5.00	6.25	7.50

TRIP GONGS POLISHED BELL METAL OR STEEL

These trip gongs pull from the center and the mechanism is all concealed under the bell.

Diam., inches...	3	4	5
Bell Metal, each	\$0.80	.90	1.00
Steel, per doz.....	.....	.....	12.00
Diam., inches...	6	7	8
Bell Metal, each	\$1.50	2.00	3.00
Steel, per doz.....	18.00	.....	30.00
Diam., inches...	10	12	14
Bell Metal, each	\$5.00	8.00	12.00
Steel, per doz.....	55.00	75.00	.....
Diam., inches...	16	18	.....
Bell Metal, each	\$16.00	18.00	.....

FOOT GONGS

12 inch, price each.....	\$14.00
14 inch, price each.....	16.00

COMBINATION FLUE BRUSH AND SCRAPER

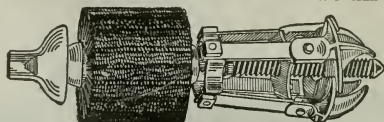


Fig. 457E

Sizes 2 to 6 inches.....per inch \$1.00

FLAT STEEL WIRE FLUE BRUSHES



Fig. 457F

Size, inches...	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4
Price, each.....	\$1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75
Size, inches.....	3	3 1/4	4	4 1/2	5	5 1/2	6	.....
Price, each.....	\$3.00	3.50	4.00	4.50	5.00	5.50	6.00	.....

EXPANSION FLUE BRUSH



MALLEABLE
IRON AND
TEMPERED
STEEL

Price, per inch..\$1.00

Fig. 457G

FIRE ROOM TOOLS

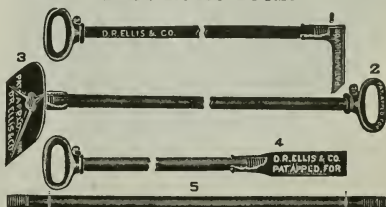


Fig. 457H

These tools are furnished with ends so that they may be fitted to any length of pipe desired. All blacksmithing is done away with.

Cut pipe the desired length with full thread at each end. Make up tight in hoe, hook or slash bar, screw on grip, tighten set screws and tool is ready to use.

Description.....	Fire Hoe	Fire Hook	Slash Bar	Grip
Size No. 1.....inches	7 x 10	9x6	15 1/2 x 3 1/2	4x2
Size No. 2.....inches	6 1/2 x 8	8x6	14 1/2 x 3	4x2
Size pipe for handle	1	1	1	1
No. 1.....	.....	.....	.....	.....
Size pipe for handle	.....	.....	.....	.....
No. 2.....	.....	.....	.....	.....
No. 1 with grip.....each	4.00	4.00	4.00	.60
No. 1 without grip.....	3.50	3.50	3.50	.....
No. 2 with grip.....	3.50	3.50	3.50	.60
No. 2 without grip.....	3.00	3.00	3.00	.....

SPEED INDICATOR AND REVOLUTION COUNTERS

V. P. SHAFT SPEED COUNTER

(Vest Pocket)

Accurate, Durable



Fig. 393C

Positively will not Clod or Heat

Reads right or left. The arrow point, applied to center of arbor or shaft, removes all dirt and oil. Take initial reading, hold the counter by the arrow point and apply rubber tip to center of arbor or shaft, deduct initial reading from final result, which will give the number of revolutions.

Each\$2.00

STANDARD SPEED INDICATOR

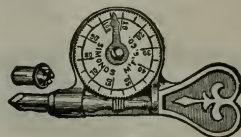


Fig. 393D

Each\$1.00

THE TABOR SPEED INDICATOR

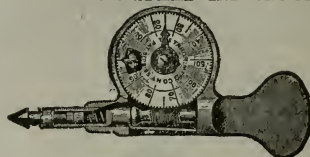


Fig. 393E

Each\$1.00

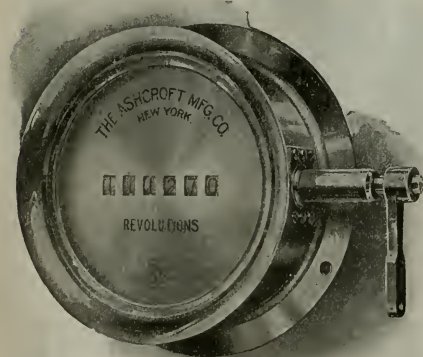


Fig. 393F

Fig. 393G REVOLUTION COUNTER

Rectangular Case

Construction. Made in eight (8) sizes of Rectangular Iron Case with Brass Ring. Supplied with an actuating lever on the right hand side for a reciprocating movement and a pin for connecting at the back of case to adapt the counter to a continuous rotary motion.

Indication. Will be supplied as specified, with four, five, six or seven number wheels, to indicate as noted in the table below.

PRICES EACH

No.	Size, inches	Figures	Counting	Price each
1	10 x 2 1/2	7	10,000,000	\$32.00
2	9 x 2 1/2	6	1,000,000	28.00
3	8 x 2 1/2	5	100,000	24.00
4	7 x 2 1/2	4	10,000	20.00
5	6 x 1 3/4	7	10,000,000	28.00
6	5 1/2 x 1 3/4	6	1,000,000	24.00
7	5 x 1 3/4	5	100,000	20.00
8	4 1/2 x 1 3/4	4	10,000	17.50

If resetting attachment is wanted, add \$4.00 to above list prices.



Fig. 393G

PRESSURE AND VACUUM GAUGES

The materials in all our Gauges are carefully selected and specially adapted to the service required of them. The workmanship is the same in all—the best only is employed.

These Gauges are not warranted for steam pressures unless equipped with a siphon of sufficient capacity to fill the spring with water and maintain the temperature of same below 110 degrees, Fahrenheit.

They are all accurately graduated by open mercury column and thoroughly inspected before leaving the Works. For greatest durability, a gauge should be graduated to double its working pressure. It is, therefore, important that you specify a graduation bearing this relation to the working pressure. Where the gauge is to be of the Compound Type for the indication of pressure and vacuum, it is necessary to specify the point to which the pressure scale is to be graduated. The vacuum scale is regularly graduated to 30 inches, but if specified will be graduated to equivalent pounds. Silvered dials are regularly furnished for all gauges, except ammonia gauges for which the dead white dial is standard.

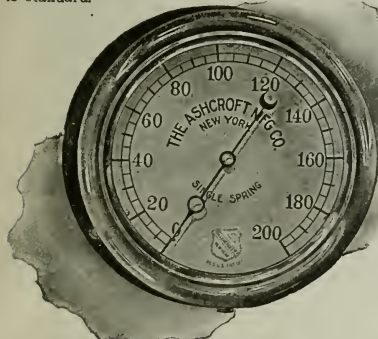


Fig. S. P. Pressure Gauge

Fig. S. V. Vacuum Gauge

Service—For any pressure medium which will not deteriorate brass.

Construction—Made in Iron Case with Brass or Nickel Plated Ring and in Brass or Nickel Plated Deep or Shallow Case. The interior mechanism consists of a Single Spring and Standard Geared Movement. The connection is 1/4 inch male bottom on the 2 1/2 inch size, and 1/4 inch male bottom on all larger sizes.

Service—For the indication of vacuum.

VACUUM GAUGE

Construction—Made in Iron Case with Brass or Nickel Plated Ring and in Brass or Nickel Plated Deep or Shallow Case. The interior mechanism consists of a Single Spring—in reversed position—and Standard Geared Movement. The connection is 1/4 inch male bottom on the 2 1/2 inch size and 1/4 inch male bottom on all larger sizes.

Vacuum Gauges, unless otherwise specified, will always be furnished independently of gauge back. They can be graduated to equivalent in pounds instead of inches, if so stated when ordering.

Size Dial Inches	Iron Case with Brass Ring	Iron Case with N. P. Ring	Brass Case	Brass Case Nickel Plated All Over	Standard Graduations of Dial Pressures
12	\$50.00	\$51.50	\$75.00	\$79.00	30, 100, 200 300, 500
10	32.00	33.00	40.00	43.00	
8 1/4	22.00	22.75	30.00	32.50	
6 3/4	16.00	16.60	20.00	22.00	30, 60, 100, 160, 200, 300, 500
6	13.00	13.50	16.00	17.50	
5 1/2	10.00	10.25	12.00	13.25	
5	8.00	8.20	11.00	12.00	30, 60, 100, 160, 200, 300
4 1/4	8.00	8.20	10.00	11.00	
3 1/2	7.00	7.18	9.00	9.75	
3	6.00	6.15	8.00	8.60	30, 60, 100, 160, 200, 300
2 1/2	6.00	6.15	8.00	8.60	

Larger Sizes Furnished on Application

DOUBLE SPRING PRESSURE GAUGES (Non-Freezing)



Fig. D. P. Pressure Gauge

Service—For any pressure medium which will not deteriorate brass, and where the service is too severe for the Single Spring Type.

Construction—Made in Iron Case with Brass or Nickel Plated Ring and in Brass or Nickel Plated Deep or Shallow Case. The interior mechanism consists of a Double Spring and Hard Geared Movement. In the 8 1/4 inch, 10 inch and 12 inch sizes the movement is mounted on the socket independently of gauge back. The connection is 1/4 inch male bottom.

When ordering do not fail to state: Size Dial and style of Gauge, also maximum pressure to which the Dial is to be graduated. Unless otherwise specified, Iron Case with Brass Ring will always be furnished. Above prices, 3 inches and larger include Cocks with each Gauge. On smaller sizes Cocks will be furnished at an extra price. No Steam Gauge warranted unless properly connected with Siphon.

Size Dial Inches	Iron Case with Brass Ring	Iron Case with N. P. Ring	Brass Case	Brass Case N. P. All Over	Standard Graduations of Dial Pressures
12	\$55.00	\$56.50	\$80.00	\$84.00	200 Other Graduations are 100-250 300-500
10	37.00	38.00	45.00	48.00	
8 1/4	25.00	25.75	34.00	36.50	
6 3/4	13.00	13.60	22.00	24.00	100-250 300-500
6	15.00	15.50	18.00	19.50	
5 1/2	12.00	12.25	14.00	15.25	
5	11.00	11.20	13.00	14.00	100-250 300-500
4 1/4	10.00	10.20	12.00	13.00	

Larger Sizes Furnished on Application

HYDRAULIC AND AMMONIA GAUGES



Fig. S. F. Hydraulic Gauge

HYDRAULIC GAUGES

With Steel Spring

Fig. S. F., Service—For the indication of all pressures from 1,000 to 20,000 pounds.

Construction—Made in Iron Case with Brass or Nickel Plated Ring and in Brass or Nickel Plated Show Case. The interior mechanism consists of a Single Steel Spring and Standard Geared Movement. The connection is $\frac{1}{2}$ inch male bottom, with wrench space for use in connecting the Gauge, and contains a check valve to eliminate shock due to the sudden release of pressure.

When ordering state the maximum pressure to which the Gauge is to be graduated. All Gauges, to insure the best results, should be graduated to double their working pressure. If a double scale, showing pounds pressure per square inch and tons on ram is required, state the diameter of ram and the number of tons to which the Gauge is to be graduated.

Size Dial Inches	Iron Case with Brass Ring	Iron Case with N. P. Ring	Brass Case	Brass Case N. P. all Over	Standard Graduations of Disc Pressures
8 $\frac{1}{2}$	\$70.00	\$70.75	\$80.00	\$82.50	2000
6 $\frac{3}{4}$	50.00	50.60	60.00	62.00	5000
6	35.00	35.50	40.00	41.50	1000-3000
5	30.00	30.50	35.00	36.00	10000
4 $\frac{1}{2}$	25.00	25.50	30.00	31.00	20000

No Cocks are furnished with these Gauges.

For Gauges with maximum hand, add \$5.00 to list prices.

AMMONIA GAUGES

Steel Spring

For Ice and Refrigerating Machines—For pressures up to 500 pounds.

Fig. S. R., Service—For Ammonia Gas or other pressure mediums which will deteriorate brass.

Construction—Made in Iron Case with Nickel Plated Ring. The interior mechanism consists of a Single Steel Spring and Standard Geared Movement heavily nickel plated. All other parts are made to withstand any corrosive action. The connection is $\frac{1}{4}$ inch male bottom.

In ordering state whether a compound scale showing pressure and vacuum, or pressure only is required. Furnished with back connection when so ordered.

Size Dial Inches	Iron Case with N. P. Ring	Standard Graduation of Dial Pressures
8 $\frac{1}{2}$	\$45.75	150 lbs. and 30 inch vacuum
6 $\frac{3}{4}$	40.60	
6	35.50	300 lbs. and 30 inch vacuum
5 $\frac{1}{2}$	30.50	
5	30.50	
4 $\frac{1}{2}$	25.50	



Fig. S. R. Ammonia Gauge

INDEPENDENT GEARED MOVEMENT GAUGE

(Steel Case)

Hard Rubber Finish

With spring-mounted glass to prevent breakage in handling. For any pressure medium which will deteriorate brass, and for vacuum, compound pressure and vacuum, and water altitude indication. For standard graduations see Pressure or Compound Pressure and Vacuum Lists.

This gauge is admirably adapted for use on hot water systems.

Vacuum Gauges graduated to 30 inches of vacuum. Altitude Gauges regularly furnished graduated to 70 feet.

Furnished in sizes 2 $\frac{1}{2}$ inch to 5 inch only.

Altitude style furnished in 4 $\frac{1}{2}$ inch size only.

While this style gauge is regularly furnished without a flange on back for fastening to board, we can furnish in this manner without extra charge.

Size Dial Inches	Pressure or Vacuum	Compound Pressure and Vacuum	Altitude
2 $\frac{1}{2}$	\$6.00	\$10.00	.....
3 $\frac{1}{2}$	7.00	10.00	.....
4 $\frac{1}{2}$	8.00	12.00	\$12.00
5	9.00	14.00	.....

Above prices (except 2 $\frac{1}{2}$ inch) include cock.



Fig. F. P. Independent Geared Movement Gauge

COMPOUND AND COMBINATION PRESSURE AND VACUUM GAUGES



Fig. S. C. Compound Pressure and Vacuum Gauge

The standard graduation for all sizes Compound Pressure and Vacuum Gauges are 30, 60, 100 and 160 pounds pressure and 30 inches vacuum and for Combination Water Pressure Gauges, 100, 200 and 300 pounds pressure and equivalent in feet. When ordering do not fail to state size dial and style of Gauge, also the maximum pressure to which the dial is to be graduated.

Fig. S. C.-S. W.-Service—For any pressure medium which will not deteriorate brass and for the indication of vacuum. Construction—Made in Iron Case with Brass or Nickel Plated Ring and in Brass or Nickel Plated Deep or Shallow Case. The interior mechanism consists of a Single Spring and Standard Geared Movement. The connection is $\frac{1}{4}$ inch male bottom.

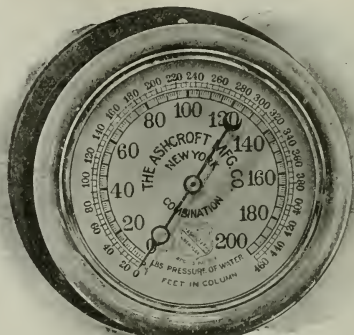


Fig. S. W. Combination Water Pressure Gauge

Size Dial inches	Iron Case with Brass Ring	Iron Case with N. P. Ring	Brass Case	Brass Case Nickel Plated All Over
12	\$60.00	\$61.50	\$80.00	\$84.00
10	40.00	41.00	50.00	53.00
8 $\frac{1}{2}$	30.00	30.75	40.00	42.50
6 $\frac{3}{4}$	20.00	20.60	25.00	27.00
6	16.00	16.50	20.00	21.50
5 $\frac{1}{2}$	14.00	14.25	16.00	17.25
*5	14.00	14.25	16.00	17.25
†4 $\frac{1}{2}$	12.00	12.20	14.00	15.00
3 $\frac{1}{2}$	10.00	10.18	12.00	12.75

*The 5 inch Combination Water Pressure Gauges take the same list prices as the 4 $\frac{1}{2}$ inch Dial.

†The 3 $\frac{1}{2}$ inch size is not made in the Combination Water Pressure Gauge.

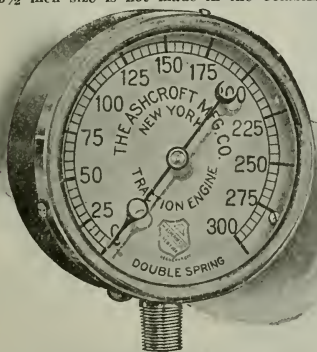


Fig. D. T. Double Spring Traction Engine Gauge

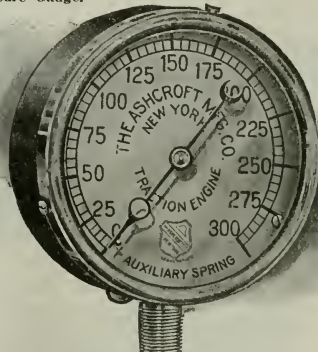


Fig. A. T. Auxiliary Spring Traction Engine Gauge

TRACTION ENGINE GAUGES

Service—For Traction or Portable Engines or any other severe service. Standard graduation 300 lbs.

Construction—Made in Iron Case with Close Brass or Nickel Plated Ring. The interior mechanism consists of a Double Spring and Hard Geared Movement. The Ring is fitted with an asbestos packing ring which, bearing on the glass, excludes all moisture, dust and other foreign substances. The connection is $\frac{1}{4}$ inch male bottom.

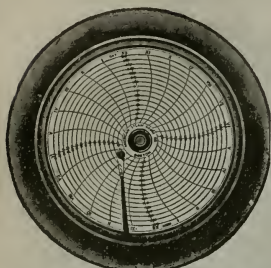
Can furnish $\frac{1}{4}$ inch without extra charge.

Size Dial inches	Iron Case with Brass Ring	Iron Case with Nickel Ring
5	\$11.00	\$11.20
4 $\frac{1}{2}$	10.00	10.20

THESE PRICES DO NOT INCLUDE COCKS

TEST SETS, SIPHONS AND RECORDING GAUGES

RECORDING GAUGE (With Cock)



American

The American Recording Gauge is designed to correctly record any variation of pressure during the day or night. The chart is rotated by a special clock movement, designed especially for this work.

The new fountain pen, which we furnish with the recording gauges, is far superior to the Hod pen and other ink recording attachments used in other makes of recording gauges. A special Red Ink is furnished for this pen; the ordinary ink will not flow properly. This gauge can be furnished with high and low alarm at slight additional expense.

Size	Iron Case, N. P. Ring, each	Brass Case Shallow, each	Brass Case Deep, each
6 1/4 inch Dial	\$36.00	\$40.00	\$45.00
8 1/2 inch Dial	44.00	50.00	55.00
10 inch Dial	58.00	65.00	72.00
12 inch Dial	76.00	85.00	95.00

One year's supply of charts, one bottle of ink, and filler, are furnished with every instrument. Nickel plated gauges are furnished for same price as brass.

INSPECTORS' TEST SET

This is a light, convenient and compact outfit especially suited for boiler inspectors. While this set is highly efficient and accurate, the total weight of the outfit in its velvet lined morocco case is but 8 pounds. Includes:

- 1 Nickel Plated Test Pump.
- 1 3-inch Nickel Plated Test Gauge, page 54, graduated to 300 pounds.
- 1 Nickel Plated Small Union Cock.
- 2 Nickel Plated Hexagon Couplings.
- 1 Nickel Plated Gauge Hand Jack.
- 1 Nickel Plated Gauge Hand-set.

Price per set, complete with case.....\$45.00



Fig. I. Inspectors' Test Set



Fig. R. N. Double Radiator Type Without Cock



Fig. P. I. Coil Pipe Type



Fig. R. W. Double Radiator Type with Cock

NO STEAM GAUGE SHOULD BE USED WITHOUT A SIPHON DOUBLE RADIATOR SIPHON

Figs. R. N.-R. W. The interior construction is such as to deflect the steam against the bottom of the chamber, where it is condensed, thus preventing live steam entering the gauge spring. At the same time, a perfect siphoning action is secured, by which the gauge spring is drained of all water when the pressure is removed, thereby preventing freezing. The Coil Pipe Siphon is recommended for general service in connection with steam gauges except where it is necessary to drain itself entirely or where vibration and other conditions prevail, which make its use impractical. These Coil Pipe Siphons are furnished in either straight or angle form of iron, brass or brass nickel plated.

	Fig. R. N.	Fig. R. W.	Fig. P. I.
Iron .....	.....	.....	\$0.50
Brass	\$1.25	\$1.50	1.00
Nickel Plated	1.50	1.75	1.50

OIL FILTERS

The primary object of the Nugent Oil Filter is to provide the best known filtering elements which are convenient, simple, effective, interchangeable, get-atable, and removable without interfering with its continuous operation or with a single pipe, fitting, bolt or valve. Simply open a door and turn on the electric light.

There are no mysterious passages for the oil to travel through. There are no partitions to complicate the cleaning operation. Wool, waste, excelsior, bone black, charcoal or felts cannot stop up the needle point sight feed valves and oil cups.

We don't claim to refine the oil and make it better than new. We guarantee to take out that which has gotten into it, viz.: dirt, grit and water. By so doing the oil is saved and cleaned and may be used over and over again, effecting a saving of fully 80 per cent.

This operation does not interfere with the filtration process or a single pipe connection. Simply open the door, turn on the electric light and swing around the dirty set of bags which will stop automatically in front of the door and directly below the blank drip. It is not necessary to remove the bag from its respective ring for washing or cleaning. Wash bags in gasoline, benzine, kerosene or hot water.

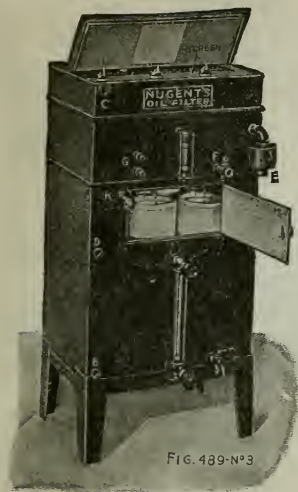
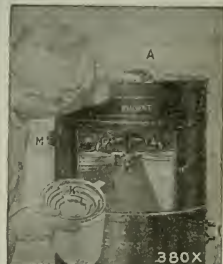


Fig. 489—No. 3

No. 0 Filter is cylindrical the total height. Nos 1, 2, 3 Filters are rectangular like cut. Nos. 4, 5, 6 Filters have cylindrical top and rectangular base.

Filter No.	List Prices		Filtering Capacity		Pure Oil Storage in Gallons	Dimensions, inches		Shipping Weight in Pounds	
	Without the Auto. Water Separator	With the Auto Water Separator	Filtering Capacity in Gallons per 24 Hours	Filtering Capacity in Gallons per Hour		Width	Length	Height with Automatic Water Separator	Height with Water Separator
0	\$20.00	\$30.00	48	2	5	10	10	32	40
1	35.00	40.00	96	4	15	12	16	42	50
2	53.00	60.00	144	6	26	17	20	42	50
3	80.00	90.00	288	12	40	18	28	42	50
4	104.00	112.00	432	18	60	23	24	50	58
5	180.00	190.00	720	30	85	24	35	50	58
6	260.00	285.00	1000	42	115	30	38	50	58
								20	20
								70	70
								90	90
								175	175
								210	210
								275	275
								370	370
								410	410

OIL GATES



Fig. 102

Perfection, Japanned Iron, with Threaded Shank, to Screw into Wood

Size, inches.....	1/2	3/4	1	1 1/4	1 1/2	2
Wt. doz., lbs.....	17	19	20	33	44	59
Per doz.....	\$9.50	12.00	14.00	16.50	20.00	28.00

Perfection, Japanned Iron, Threaded Shank to Screw into Iron Pipe

Size, inches.....	3/4	1	1 1/4	1 1/2	2
Wt. doz., lbs.....	19	20	33	44	59
Per doz.....	\$12.00	14.00	16.50	20.00	28.00

PETROLEUM FAUCETS

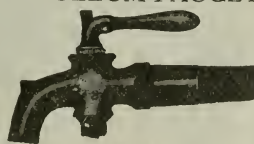


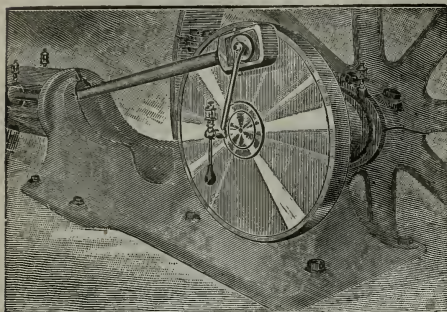
Fig. 14

Japanned Cast Iron, Lever Handle, with Brass Key, Screw Shank for Wood

Size, inches.....	3/4	1	1 1/4	1 1/2	2
Wt. doz., lbs.....	6	9	13	18	23
Per dozen.....	\$10.00	11.00	13.00	16.00	23.00

FILTERS OF LARGER CAPACITIES QUOTED UPON RECEIPT OF REQUIREMENTS

NUGENT'S PATENT OILING DEVICES

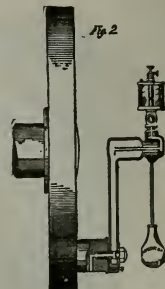


Anti-Stand Dust Proof Crank Pin Center Oiling Device, designed for lubricating the crank pin of an engine or any other bearing surface where applicable, from a stationary sight feed oil cup without the aid of a supporting stand from the floor or other rigid object.

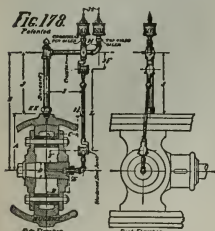
As applied, this device is made oil tight without the aid of stuffing-boxes or packing. Oil cup proper remains perfectly stationary when engine is running at full speed, and not a particle of dust or grit can enter with the oil.

IN ORDERING

Send exact stroke of engine, which is twice the distance between centers of the shaft and crank pin.



If purchaser furnishes the bolt, send diameter of bolt for each stroke engine.
If crank pin is drilled and you want us to furnish the bolt, send full particulars and data about the hole—that is, the size and kind of tap, including the number of threads to the inch, and if pin has a loose cap, send thickness of this cap at the center where the bolt goes through.
If purchaser furnishes the oil cup, always mention size of tap for same.



(Inclusive) Stroke	Polished without Oil Cup	Size and Kind of Bolts We Ship With Each When No Other Size or Kind is Ordered Use No Smaller		Size of Oil Cup Recommended	
		Diameter	Threads to the Inch	Capacity Ounce	Size of Shank Pipe Tap
6 to 16	\$10.00	$\frac{3}{4}$	10	3	$\frac{3}{8}$
17 " 30	12.00	$\frac{3}{4}$	10	5	$\frac{3}{8}$
31 " 48	15.00	$\frac{3}{4}$	9	10	$\frac{1}{2}$
49 " 72	18.00	1	8	Pint	$\frac{1}{2}$

Fig. 178 illustrates Telescopic Crosshead Pin and Top Guide Oiling device.

List price without Oil Cups. Polished.

1 to 30 in. stroke, inclusive.....	\$21.00
31 to 48 in. stroke, inclusive.....	24.00
49 to 72 in. stroke, inclusive.....	27.00

If distance I is longer than 8 $\frac{1}{2}$ in. add \$2.00 to list price for supports which will be necessary.

IN ORDERING

Send stroke; pipe tap at E, H and KK and distances A, B, C, D.
Order by Fig. No. 178.

Fig. 27 illustrates Telescopic Double Eccentric Oiling Device.

List Price without Oil Cups, polished.

For Single Eccentric, all throws.....	\$21.00
For Double Eccentric, all throws.....	36.00

IN ORDERING

Set Eccentrics on top center and give distances K, L, M, also N. O and the throw for each eccentric. Pipe tap at I and J. Order by Fig. No. 173 for single and No. 27 for double Eccentrics.

If L or L+M exceeds 15 inches add \$2.50 to the list price for supports which will be necessary.

Order by Fig. No. 27.

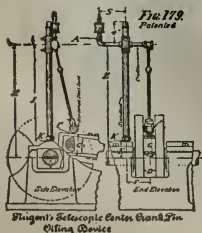
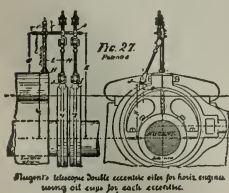
Fig. 179 illustrates Telescopic Center Crank Pin Oiling Device.

List Price without Oil Cup. Polished.

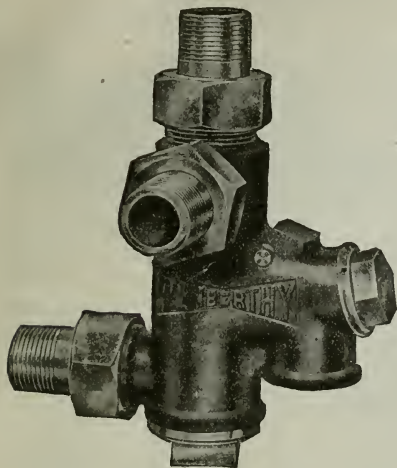
1 to 11 in. stroke, inclusive.....	\$22.00
12 to 18 in. stroke, inclusive.....	24.00

IN ORDERING

Send stroke; pipe tap at A and C, and distances D, E, F and G.
Order by Fig. No. 179.



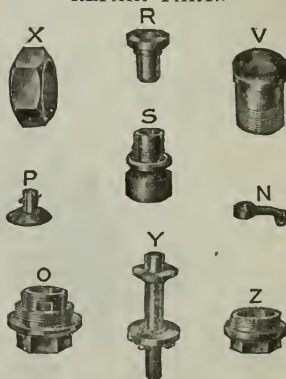
PENBERTHY AUTOMATIC INJECTORS



A perfect restarting automatic machine. If the current of water is broken by any cause, the injector will pick up the water and re-establish the current to the boiler without the least attention. Every machine is carefully tested, and will work on the following points: Start low, 20 to 22 pounds steam on 3-foot lift. Work high, 165 to 170 pounds steam on 3-foot lift. Lift water, 20 to 24 feet on 60 to 80 pounds steam. Will deliver water to boiler at 160 to 212 degrees, according to temperature of feed water and steam pressure. Water 200 to 212 degrees can always be delivered at nearly all pressures over 50 pounds by throttling suction valve and delivering minimum capacity. It is advisable in many cases to install an injector large enough so that the supply can be cut down and attain this result, thereby saving fuel. By placing a short piece of pipe having a stopcock, in the overflow, and closing after the injector has started, water 8 to 10 degrees hotter can be handled, but the injector is rendered non-automatic while the stopcock is closed.

Size	H. P. Based on Ordinary Tubular Boiler	H. P. Based on 30 lbs. Water per H. P. per Hour	Pipe Connections inches	Gals. per Hour 1 to 3 ft. Lift, 60 to 110 lbs. Steam Pressure		Price Each
				Max.	Min.	
O	3 to 6	4 to 8	¼	60	35	\$ 15.00
OO	4 to 8	6 to 12	⅜	80	45	16.00
A	8 to 16	10 to 20	½	135	70	18.00
AA	12 to 22	15 to 30	½	180	100	20.00
B	17 to 32	22 to 45	¾	260	140	25.00
BB	20 to 45	25 to 60	¾	360	180	30.00
C	40 to 65	45 to 80	1	475	250	40.00
CC	45 to 80	50 to 100	1	600	325	45.00
D	50 to 100	60 to 135	1 ¼	800	425	55.00
DD	75 to 135	85 to 165	1 ¼	1000	525	60.00
E	100 to 180	125 to 235	1 ½	1400	740	75.00
EE	115 to 255	150 to 320	1 ½	1900	850	90.00
F	160 to 320	200 to 400	2	2400	1275	110.00
FF	200 to 400	250 to 500	2	3000	1600	125.00
G	300 to 500	325 to 600	2 ½	3600	1875	150.00
GG	375 to 600	400 to 750	2 ½	4200	2150	200.00

REPAIR PARTS



REPAIR PARTS

Size of Injector.....		O OO	A AA	B BB	C CC	D DD	E	EE	F	FF	G GG
R—Steam Jet	each	\$0.25	\$0.35	\$0.45	\$0.55	\$0.65	\$0.75	\$0.75	\$0.85	\$1.00	\$2.00
S—Suction Jet	"	.25	.35	.45	.55	.65	.75	.75	.85	1.00	3.00
Y—Delivery Jet	"	1.25	1.50	2.00	2.50	3.00	3.75	4.50	5.50	6.50	9.00
X—Coupling Nut	"	.25	.30	.40	.50	.60	1.25	1.25	1.50	1.50	2.00
V—Tail Pipe	"	.25	.30	.40	.50	.60	.80	.80	1.00	1.00	1.25
Z—Overflow Cap	"	.30	.40	.50	.60	.70	.80	.80	.90	.90	1.50
P—Overflow Valve	"	.40	.50	.60	.75	.90	1.00	1.10	1.25	1.25	1.75
N—Overflow Hinge	"	.10	.10	.15	.15	.15	.20	.20	.20	.20	.30
O—Plug	"	.60	.80	1.00	1.25	1.50	1.75	1.75	2.00	2.00	4.00
Strainer	"	.40	.45	.50	.55	.60	.75	.75	1.00	1.00	1.50

Extra parts furnished for injectors numbered above 21000 without returning it to factory. In ordering parts do not fail to give serial letter and number, which will be found on top of overflow. In referring to or ordering parts, designate them by letter or name as per above.

FOR OTHER STYLES OF INJECTORS, SEE INDEX

INJECTORS

METROPOLITAN AUTOMATIC INJECTOR

MODEL X

The Metropolitan Injector Model X was designed to meet the demand for an injector which is specially adapted for the severe service encountered on traction and portable engines and boilers and which will interchange without alteration of piping, with other makes used on such services. The Model X is automatic or self-starting after interruption of steam or feed water supply. The bronze compositions of the parts, which are identical with those in other models of the Metropolitan injector, make the Model X particularly well adapted for bad water and other severe conditions met in this service. The workmanship, as well as the materials throughout are of the highest grade. All the wearing parts are extra heavy and the distribution of metals in body or casing gives the greatest possible strength. The cost of maintenance of the Model X is lower than any other injector of this type.

Working Range—The Metropolitan Injector Model X when working with feed water at 70 degrees Fahrenheit on lift not over two feet, will work from 20 to 160 pounds steam pressure; with feed water at 70 degrees Fahrenheit and 20 feet lift, it will work from 55 to 100 pounds steam pressure; with feed water at 120 degrees Fahrenheit and two feet lift it will work from 30 to 85 pounds steam pressure.

Every Metropolitan Injector is thoroughly inspected and tested under actual working conditions before leaving the factory and is fully guaranteed.

A flat strainer is furnished with each Model X Injector.

Size No.	Size of all Pipe Connections	Capacity per Hour 65 to 90 lbs. 2 ft. Lift, gals.	Horse Power Ordinary Tubular Boiler; Basis 7½ gals. Water per H-P per Hour*	Horse Power Water Tube Boiler Basis 30 lbs. Water per Hour*	Price
20	¾	60	2 to 6	4 to 8	\$15.00
30	¾	80	4 to 8	6 to 12	16.00
35	1½	140	8 to 16	12 to 20	18.00
40	1½	190	16 to 23	20 to 30	20.00
50	¾	270	23 to 30	30 to 45	25.00
60	¾	370	30 to 45	45 to 60	30.00
70	1	490	45 to 65	60 to 80	40.00
80	1	620	65 to 80	80 to 110	45.00
90	1¼	780	80 to 100	110 to 145	55.00
100	1¼	890	100 to 130	145 to 180	60.00

*These horse-power ratings are approximately 30 per cent below those based on actual capacities in gallons per hour.

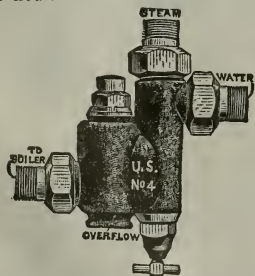


Fig. 472B. U. S. Automatic Injector

Size	All Pipe Connections	Capacity Gallons per Hour		Horse Power	Each
		Max.	Min.		
00	¼	36	15	1 to 4	\$13.00
0	¾	65	28	3 to 8	14.00
1	¾	90	40	6 to 10	16.00
2	1½	125	60	8 to 15	18.00
3	1½	170	75	15 to 20	20.00
4	¾	250	125	20 to 30	25.00
5	¾	340	140	30 to 40	30.00
6	1	475	250	40 to 60	40.00
7	1	575	300	60 to 70	45.00
8	1¼	750	350	70 to 95	55.00
9	1¼	920	450	85 to 120	60.00
10	1½	1350	675	120 to 165	75.00
11	1½	1750	850	165 to 230	90.00
12	2	2275	1000	230 to 295	110.00
13	2	2820	1300	295 to 375	125.00
14	2	3400	1700	375 to 460	150.00
15	2½	3650	1800	460 to 500	175.00
16	2½	4000	1950	500 to 600	200.00

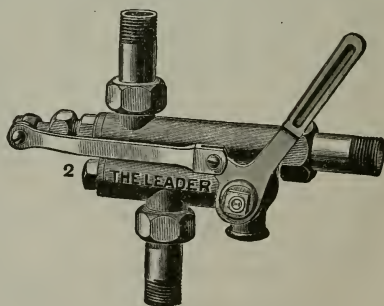


Fig. 472C. The "Lender" Injector

Size	Sizes of Pipes		Horse Power of Boiler Will Feed	Gals. per Hour 60 lbs. Steam	Each
	Steam Pipe	Suction & Feed			
1	¾	¾	3 to 7	60	\$16.00
2	¾	¾	7 to 10	90	18.00
3	1½	1½	12 to 13	150	22.00
4	1½	1½	13 to 25	220	25.00
5	¾	¾	25 to 35	300	30.00
6	¾	¾	35 to 45	400	35.00
7	1	1	45 to 60	500	40.00
8	1	1¼	70 to 90	750	55.00
10	1	1¼	100 to 125	1000	65.00
11	1¼	1¼	125 to 150	1300	75.00
12	1¼	1¼	150 to 200	1800	90.00

FOR PIPE, FITTINGS AND VALVES, SEE INDEX

METROPOLITAN AUTOMATIC INJECTORS

MODEL N



Fig. 5 Injector

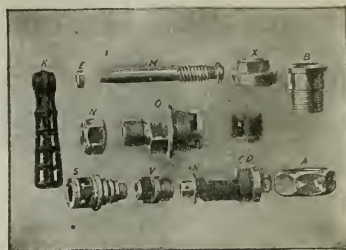


Fig. 5A Repair Parts

INJECTORS—MODEL N

Sizes	Price Each	Size of all Pipe Connection, Inches	Size Over-flow or Waste Pipe Inches	Capacity with 80 p'nds Steam Pressure, 2-ft. Lift, Gallons	Horse-Power for the Ordinary Type of Boiler and Engine	Horse-Power on a Basis of 30 pounds Evaporation per H.-P. per Hour
2	\$ 15.00	$\frac{3}{8}$	$\frac{3}{8}$	60	4 to 6	5 to 8
3	16.00	$\frac{3}{8}$	$\frac{3}{8}$	80	6 to 8	8 to 12
3½	18.00	$\frac{1}{2}$	$\frac{3}{8}$	120	8 to 15	12 to 20
4	20.00	$\frac{1}{2}$	$\frac{3}{8}$	165	15 to 20	20 to 28
5	25.00	$\frac{3}{4}$	1	250	20 to 30	28 to 40
6	30.00	$\frac{3}{4}$	1	350	30 to 45	40 to 55
7	40.00	1	1½	500	45 to 65	65 to 80
8	45.00	1	1½	600	65 to 80	80 to 110
9	55.00	1¼	1½	800	80 to 100	110 to 145
10	60.00	1¼	1½	1000	100 to 130	145 to 180
11	75.00	1½	2	1300	130 to 170	180 to 235
12	90.00	1½	2	1750	170 to 230	235 to 300
13	110.00	2	2½	2300	230 to 300	300 to 400
14	125.00	2	2½	2550	300 to 375	400 to 500

INJECTOR REPAIR PARTS

PRICE, EACH													
Sizes	Steam Jet	Suction Jet	C. D. R. Connecting & Delivery Tube & Auxiliary Check	Overflow Valve	Steam Plug	M. Steam Valve and Stem	N. Packing Nut	K. Steam Valve Handle	A. Coupling Nut	B. Tail Piece	X. Overflow Cap	F. Nut for Stem M	Jet Wrenches
2	\$1.50	\$0.60	\$1.75	\$0.25	\$1.00	\$0.40	\$0.30	\$0.60	\$0.60	\$0.40	\$0.50	\$0.10	\$1.30
3	1.75	.70	2.10	.50	1.25	.55	.40	.70	.80	.55	.75	.10	1.40
3½	2.00	.90	2.75	.75	1.50	.75	.50	.80	1.20	.80	1.00	.10	1.50
4	2.50	1.25	3.50	1.00	2.25	1.10	.65	1.00	1.65	1.20	1.25	.15	1.75
5	3.00	1.50	4.50	1.25	3.00	1.35	.80	1.20	2.00	1.50	1.50	.15	2.00
6	3.75	1.85	5.50	1.50	3.75	1.65	1.00	1.40	2.40	1.75	1.75	.15	2.25
7	4.50	2.25	6.50	1.75	4.50	1.90	1.20	1.60	2.80	2.00	2.00	.15	2.50
8	5.00	2.50	7.50	2.00	5.00	2.20	1.40	1.80	3.20	2.25	2.25	.15	3.00
9	5.50	2.75	8.50	2.25	5.50	2.40	1.60	2.00	3.60	2.50	2.50	.15	3.50
10	6.00	3.00	9.50	2.50	6.00	2.60	1.80	2.20	4.00	2.75	2.75	.15	4.00
11	7.00	3.50	11.00	3.00	7.00	3.00	2.00	2.50	4.50	3.00	3.00	.20	4.50
12	8.00	4.00	12.50	3.50	8.00	3.50	2.20	2.80	5.00	3.25	3.25	.20	5.00
13	9.00	4.50	14.00	4.00	9.00	4.00	2.50	3.00	5.50	3.50	3.50	.20	5.50
14	10.00	5.00	15.50	4.50	10.00	4.50	2.80	3.20	6.00	3.75	3.75	.20	6.00

In ordering, always state the size, number of the injector; model letter and serial or factory number.

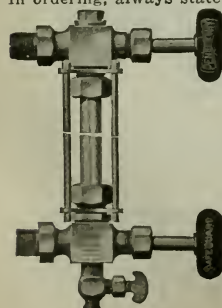


Fig. 18. Exterior

PENBERTHY "SAFEGUARD" WATER GAUGES

"SAFEGUARD"

The Penberthy "Safeguard" Automatic Water Gauge is a high grade square body bronze gauge, designed especially for protection against personal injuries and damage to properties caused by the breaking of gauge glasses, thereby releasing scalding water from boiler. The construction makes it impossible for the automatic features to operate except when glass breaks. The automatic valves are brass balls, one contained in body of lower arm, the other in shank of upper arm. When glass breaks, the lower valve closes absolutely tight, while the upper valve is made to leak to equalize pressure in glass when new glass is put in, thereby causing balls to drop from their seats by gravity.

Size, Shank	Inches	$\frac{3}{8}$ and $\frac{1}{2}$	$\frac{3}{4}$
Price	each	5.00	6.50

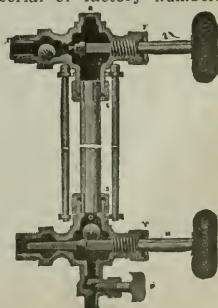


Fig. 18A. Interior

EJECTORS AND JET PUMPS

H-D EJECTORS AND JET PUMPS

Made with Independent Couplings and Tubes



Fig. 473A

These Ejectors are used for lifting and conveying water and other liquids from one level to another.

The H-D Ejector will lift 24 feet. When it is desired to raise the liquid to a greater distance, place the Ejector near the liquid and elevate it. With a steam pressure of 65 pounds it will elevate to 50 to 60 feet, and with 100 pounds steam up to 70 to 80 feet.

Sizes	Price each	Pipe Connections		Cap'y per Hour gallons	Strainers each
		Steam	Suction and Delivery		
No. 1 Brass	\$8.00	$\frac{3}{8}$	$\frac{1}{4}$	250	\$0.50
No. 2 Brass	10.00	$\frac{1}{2}$	$\frac{3}{8}$	500	.75
No. 3 Brass	15.00	$\frac{3}{4}$	1	960	1.00
No. 4 Brass	20.00	1	$1\frac{1}{4}$	1,300	1.25
No. 5 Brass	25.00	$1\frac{1}{2}$	$1\frac{1}{2}$	2,000	1.50
No. 6 Iron	35.00	$1\frac{3}{4}$	2	4,000	1.75
No. 7 Iron	45.00	$1\frac{1}{2}$	$2\frac{1}{2}$	8,000	.....
No. 8 Iron	55.00	2	3	11,000	.....
No. 9 Iron	70.00	$2\frac{1}{2}$	4	15,000	.....

AMERICAN EJECTORS AND JET PUMPS



Fig. 473B

No.	Pipe Size		Capacity per Hour 60 to 100 lbs. Steam			Price	
	Steam	Suction and Del.	3 feet Lift gallons	25 feet Elev. gallons	50 feet Elev. gallons	Ejec'r	Jet Pump
000	$\frac{1}{4}$	$\frac{3}{8}$	150	115	75	\$6.00	\$4.00
00	$\frac{1}{4}$	$\frac{1}{2}$	250	185	125	8.00	5.00
0	$\frac{3}{8}$	$\frac{3}{4}$	375	280	185	9.00	6.00
1	$\frac{1}{2}$	1	500	375	250	10.00	7.50
2	$\frac{3}{4}$	$1\frac{1}{4}$	1,000	750	500	15.00	10.00
3	1	$1\frac{1}{2}$	1,500	1,150	750	20.00	12.50
4	$1\frac{1}{4}$	2	2,000	1,500	1,000	25.00	15.00
5	$1\frac{1}{2}$	$2\frac{1}{2}$	3,800	2,850	1,400	35.00	17.50
6	2	3	4,500	3,375	2,250	40.00	25.00
7	$2\frac{1}{2}$	4	6,500	4,870	2,750	50.00	35.00
8	$2\frac{1}{2}$	5	10,000	7,500	5,000	65.00	55.00
9	$2\frac{1}{2}$	6	15,000	11,500	7,500	90.00	.....

* Sizes up to and including number 5 are all brass. Number 6 and all larger sizes are iron bodies. The jets of ejectors of all sizes are brass and of a special good wearing composition.

CELLAR DRAINER

A water pressure ejector of high capacity, made of best bronze metal, automatically operated by a copper float controlled, quick opening and closing valve. It cannot leak, and allows the ejector to give its greatest efficiency by working to full capacity. The float-arms are slotted where they connect to the valve lever, preventing the ejector from operating until water has raised float to highest point. As the water is ejected, the arms travel down the length of these slots before the weight of the float affects the valve. No leather washers to dry up and leak.



Fig. 473C

There is no chance of corrosion or of the exterior parts becoming clogged up by deposits of slime, dirt or sediment. A special strainer prevents any foreign particles from coming in contact with the interior parts. A foot valve is also provided inside the strainer, which closes the instant the drainer ceases operation, holding all the water in the pipes all primed for starting instantly at the next filling of the pump, and also preventing flooding of the cellar if for any reason the water pressure is insufficient to operate the ejector.

No.	Pipe Conn. inches		Dimensions Over All, in.		*Capacity gal. per Hour	Price each Automatic
	Supply	Dischg.	Height	Diam.		
1	$\frac{1}{2}$	1	16	10	115 to 650	\$25.00
2	$\frac{3}{4}$	$1\frac{1}{4}$	20	12	180 to 1050	40.00
3	1	$1\frac{1}{2}$	25	15	310 to 1650	55.00
4	$1\frac{1}{4}$	2	28	16	450 to 2400	80.00
5	$1\frac{1}{2}$	$2\frac{1}{2}$	32	18	600 to 3200	110.00
6	2	3	36	20	780 to 4200	160.00
7	$2\frac{1}{2}$	$3\frac{1}{2}$	38	22	1000 to 5300	225.00
8	3	4	40	24	1250 to 6500	300.00

* Capacities given above represent actual water removed from the pit with pressure 20 to 80 pounds and 3 to 18-foot elevation.

Sizes 7 and 8 made to order only.

BLAKESLEE'S STEAM JET PUMPS



Fig. 473D

Designed for supplying water tanks at mills, factories, and for pumping water or other liquids at mines, stone quarries, tanneries, oil works, etc.

Size of Pump inches	Suction Pipe inches	Dischg. Pipe inches	Steam Pipe inches	Steam Opening	Cap'y per Min. gallons	Each
$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{16}$	8	\$8.00
1	1	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{8}$	15	10.00
$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{4}$	20	12.00
$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{4}$	30	14.00
2	2	$1\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{4}$	40	16.00
$2\frac{1}{2}$	$2\frac{1}{2}$	2	1	$\frac{1}{2}$	50	20.00
3	3	$2\frac{1}{2}$	1	$\frac{1}{2}$	60	24.00

FOR OTHER STYLES OF EJECTORS, SEE INDEX

PENBERTHY "XL-96" IMPROVED EJECTORS

Lifts 22 to 25 Feet. Elevates 25 to 100 Feet, 30 to 100 Pounds Pressure



REPAIR PARTS



The lifting and elevating power is so combined in the "XL-96" Ejector as to make it unquestionably the best device of its kind. The principle and power contained in so small, handy and economical an instrument, continually suggests new uses, which often demand that the tubes of the ejector be proportioned particularly for the service. We have perfected and can furnish special ejectors singularly efficient in the work for which they are designed.

No.	Steam Con- nection inches	Suction and Dis- charge inches	Capacity, Gallons per Hour						Price, Each	
			3-Foot Lift		50-Foot Eleva- tion	25-Foot Eleva- tion	Vertical Lift Feet			
			Steam Pressure, Pounds						Brass	Iron Body Brass Jets
			40 to 65	20 to 40 or 65 to 100	40 to 65	40 to 65	40 to 75	25 to 40 or 75 to 100		
1	$\frac{3}{8}$	$\frac{1}{2}$	240	235	120	180	23	20	\$8.00	....
2	$\frac{1}{2}$	$\frac{3}{4}$	500	450	250	375	25	22	10.00	....
3	$\frac{3}{4}$	1	840	700	420	625	25	22	15.00	....
4	1	$1\frac{1}{4}$	1,350	1,300	650	950	25	22	20.00	....
5	1	$1\frac{1}{2}$	1,950	1,850	975	1,450	25	22	25.00	\$20.00
6	$1\frac{1}{4}$	2	3,500	3,000	1,750	2,600	25	22	35.00	27.50
*7	$1\frac{1}{2}$	$2\frac{1}{2}$	5,700	4,350	2,500	3,750	25	22	50.00	40.00
*8	2	3	9,500	8,160	4,750	7,200	25	22	70.00	50.00
*9	2	$3\frac{1}{2}$	13,600	12,400	6,800	10,200	25	22	105.00	70.00
*10	$2\frac{1}{2}$	4	18,400	17,100	9,200	13,800	25	22	145.00	95.00

Sizes 5 and 6 will be sent in all brass, unless ordered with iron body and brass jets and steam connection.

*Unless ordered in brass, Sizes 7 to 10, inclusive, will be shipped with iron body, brass jets and steam connection.

TABLE SHOWING SIZE OF BOILERS REQUIRED FOR EJECTORS

Number of Ejector.....	1, 2, 3	4, 5, 6	7, 8	9, 10
Size of Boiler, horse power.....	2 to 6	8 to 12	15 to 20	25 to 30

REPAIR PARTS

Size Number	1	2	3	4	5	6	7	8	9	10
R—Jet	\$0.25	\$0.35	\$0.45	\$0.55	\$0.60	\$0.80	\$1.00	\$1.25	\$1.50	\$2.00
Y—Delivery Jet .....	.80	1.00	1.25	1.50	1.75	2.50	4.00	6.00	8.00	10.00
V—Tail Pipe Brass....	.25	.30	.40	.50	.50	.60	.80	1.00	1.00	1.25
X—Coupling Nut Brass..	.25	.30	.40	.50	.50	.60	1.25	1.50	1.50	2.00
Strainer .....	.45	.50	.55	.60	.75	1.00	1.50	....	....	....
Q—Regular I. P. C'pl'ing ..	....	....	....	....	....	....	....	....	....	....

SPECIAL ACID RESISTING EJECTORS

While the composition used in the regular stock "XL-96" Ejector is very efficient against the milder solutions containing acids, this ejector is made of special anti-acid compositions, which will resist the action of acids as far as it is possible for metal to resist it. Prices on application.

NOISELESS WATER HEATERS



Size 1, for $\frac{3}{8}$ in. pipe.....	each	\$1.75
Size 2, for $\frac{1}{2}$ in. pipe.....	"	2.00
Size 3, for $\frac{3}{4}$ in. pipe.....	"	2.50
Size 4, for 1 in. pipe.....	"	3.00

For Other Styles of Ejectors, See Index

MADISON—KIPP VALVELESS FORCE FEED LUBRICATORS

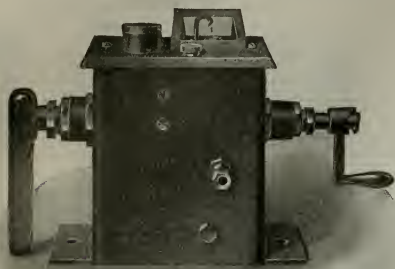


Fig. 651. Sight Feed Type Model 50

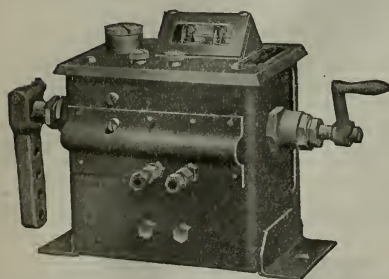
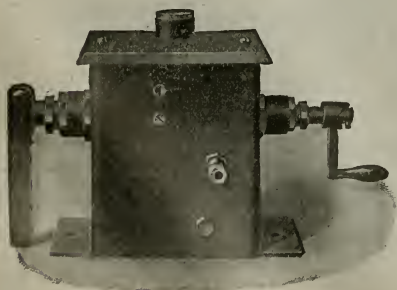
Fig. 652. Showing Arrangement of the Multiple Feeds in the Larger Sizes
This is Model 50, Double Feed

Fig. 653. Blind Feed Type

These Lubricators can be furnished in either the sight feed type or the blind feed type. They are built rugged and substantial for rough and severe service, and all working parts are under cover running in oil. There are no joints or packing to work loose and leak oil. The tank is made of sheet steel and the design is neat and attractive.

These Lubricators are built on the celebrated KIPP no-valve principle. Over five hundred thousand in daily use in all kinds of service and in all temperatures, are proof positive of their accuracy and reliability. They start and stop with the engine and feed the same always as adjusted. The only care or attention necessary is to fill with oil when needed.

We recommend these Lubricators for oiling valves, bearings and cylinders on gas and steam engines of all kinds including hoisting engines, steam shovels, steam dredges, electric light engines, excavating engines, coal dock engines, traction engines, steam pumps, air compressors, etc.

No. of Feeds	Capacity Pints	Shipping Weights	Price Sight Feed Type	Price Blind Feed Type
1	5	20	\$10.00	\$8.00
2	5 1/2	23	15.00	....

The blind feed type is made up only in the single feed. We can furnish the sight feed type up to 12 feeds.

Write for prices on larger sizes.

FOR OTHER STYLES OF LUBRICATORS, SEE INDEX

DETROIT IMPROVED STANDARD LUBRICATOR

DOUBLE CONNECTION

The Double Connection Improved Standard Lubricator is used on all kinds of reciprocating steam engines, steam pumps, etc., and is a lubricator for general service.

The cored heating passage, cast integral with the body, is filled with steam at all times the lubricator is in operation, so that the oil is maintained at an even temperature and there is no fluctuation in the rate of feed. The heat keeps the oil in a thoroughly liquid condition and the lubricator is well fitted for feeding heavy oils.

The support arm is in two parts. The part containing the globe valve is first screwed into the steam pipe and the lubricator is then coupled to it. This makes attachment easy and, on account of the globe valve, the lubricator can be removed at any time for any purpose without letting down steam.

The sight feed and gauge arms are screwed into the body and can be easily replaced should they be damaged by rough usage. In this way the more delicate parts can be renewed and the lubricator made good as new at very little expense.

In the $\frac{1}{2}$ pint and $\frac{1}{4}$ pint lubricators where an additional opening might tend to weaken the body, the filler and upper gauge arm have been combined in such a way as to make it unnecessary to eliminate the gauge on these small sizes. This filler secures easy filling by providing an ample vent. Through this filler a stream of very heavy oil may be poured rapidly without annoyance, waste, and delay resulting from bubbling.

For use on all kinds of steam engines, steam pumps, etc.

Installed with both connections between the boiler and the throttle.

Finished in polished brass or nickel plated.

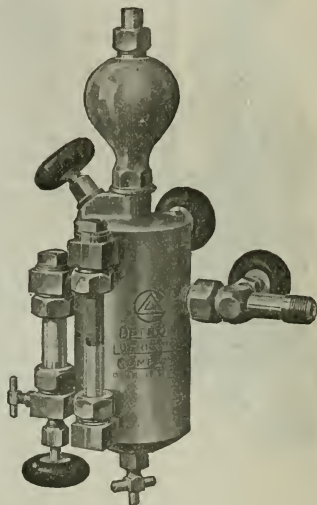


Fig. 10

Size	$\frac{1}{2}$ Pt.	$\frac{1}{2}$ Pt.	1 Pt.	1 Qt.	$\frac{1}{2}$ Gal.	1 Gal.
Pipe Thread on Support Arm	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
List Price						
Brass Finish	\$17.00	\$22.00	\$30.00	\$45.00	\$60.00	\$75.00

REPAIR PARTS FOR IMPROVED STANDARD LUBRICATOR

Illustration Shows Double Connection—1 Pint Capacity

Be sure to give the piece number and name of the part wanted and the serial shop number (stamped on the upper gauge arm of the Improved Standard Lubricators).

Part No.	Name of Part	Price
5	Condenser tail pipe nut.....	\$0.15
6	Condenser tail pipe.....	.25
550	Steam valve stem follower.....	.15
27	Feed stem.....	.25
32	Lower feed arm.....	1.00
43	Water valve center piece.....	.25
44	Water valve stem packing nut.....	.15
45	Water valve stem.....	.25
47	Feed glass packing nut.....	.30
50	Feed stem packing nut.....	.15
51-x	Body.....	2.50
56	Gauge packing nut.....	.15
58	Drain valve body.....	.35
59	Drain valve stem.....	.25
77	7/8 Plug.....	.25
140	Filler plug.....	.40
141	3/4 Plug.....	.25
142	Upper gauge arm.....	.75
145	Condenser.....	1.50
146	Lower gauge arm.....	.50
148	Vent stem.....	.25
149	Support arm tail piece.....	.25
150	Support arm tail pipe nut.....	.15
151	Support arm.....	.75
155	Steam valve packing nut.....	.15
156	Steam valve center piece.....	.25
177	Upper feed arm.....	.75
3648	Steam valve stem.....	.25
189	Oil tube.....	.25
190	Water tube.....	.15
3649	Feed nozzle.....	.15
1412	No. 2 wood handle.....	.15
	Gauge glass.....	.10
	Sight feed glass.....	.10
	Gaskets (per doz.).....	.25
27	Handle plate (not shown).....	.15
779	Support arm complete.....	1.70
2593	Tension spring (not shown).....	.05
3771	Tension washer (not shown).....	.05

FOR OIL AND GREASE CUPS, SEE INDEX

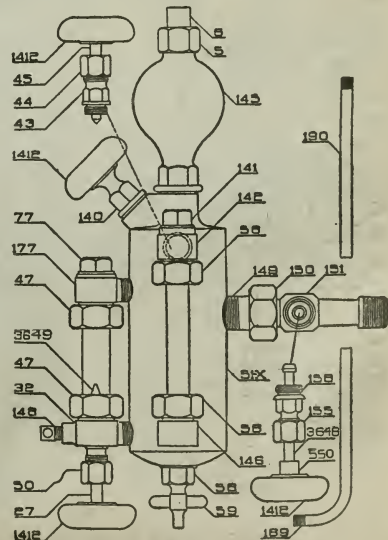


Fig. 10A

DETROIT IMPROVED LUBRICATOR

Single Connection

They are used on all kinds of reciprocating steam engines, steam pumps, etc., where a double connection lubricator cannot be installed because the arrangement of equipment does not give enough room for the installation of a double connection lubricator. Wherever possible, however, we advise the use of a double connection lubricator in preference to the single connection type because any lubricator with two connections to the steam pipe has better condensation and consequently better feeding qualities.

In the $\frac{1}{2}$ and $\frac{1}{4}$ pint lubricators, where an additional opening might tend to weaken the body, the filler and upper gauge arm have been combined in such a way as to make it unnecessary to eliminate the gauge on these small sizes. This filler secures easy filling by providing an ample vent. Through it a stream of even very heavy oil may be poured rapidly, without annoyance, waste and delay resulting from bubbling.

The $\frac{1}{4}$ pint size has no gauge glass.

For use on all kinds of steam engines, steam pumps, etc., where conditions do not permit the installation of a double connection lubricator.

Connected to the steam pipe either above or below the throttle or into the steam chest direct.

Finished in polished brass or nickel plated.

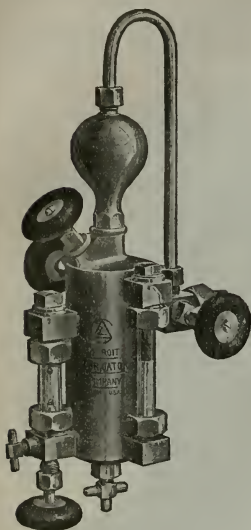


Fig. 14

Size	$\frac{1}{4}$ Pt.	$\frac{1}{2}$ Pt.	$\frac{1}{2}$ Pt.	1 Pt.	1 Qt.
Pipe Thread on					
Support Arm	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
List Price, Brass Finish	\$12.00	\$15.00	\$20.00	\$28.00	\$43.00

PARTS OF
IMPROVED STANDARD LUBRICATOR

Single Connection

Be sure to give the piece number and name of the part wanted and the serial shop number (stamped on the upper gauge arm of the Improved Standard Lubricator).

Cut Shows 1 Pint Size

Part No.	Name of Part	Price
7	Drain valve body.....	\$0.35
8	Drain valve stem.....	.25
11	Steam valve packing nut.....	.15
16	Filler plug.....	.40
17	3/4 Plug.....	.25
19	Vent stem.....	.25
3648	Steam valve stem.....	.25
21	Steam valve center piece.....	.25
550	Steam valve stem follower.....	.15
32	Lower feed arm.....	1.00
33	Upper feed arm.....	.75
34	Water valve center piece.....	.75
35	Feed stem packing nut.....	.25
36	Equalizing tube and water valve stem nut.....	.15
37	Feed stem.....	.25
39	Feed glass packing nut.....	.20
40	3/4 Plug.....	.25
41	Water valve stem.....	.25
41-x	Body.....	2.50
53	Upper gauge arm.....	.75
54	Lower gauge arm.....	.50
58	Gauge glass packing nut.....	.25
61	Water tube.....	.15
62	Oil tube.....	.25
101	Support arm tail pipe nut.....	.15
109	Support arm tail pipe.....	.20
115	Support arm choke.....	.15
125	Condenser.....	1.50
126-A	Support arm elbow.....	.75
127-x	Equalizing tube.....	.50
3649	Feed nozzle.....	.15
1412	No. 2 wood handle.....	.15
	Gauge glass.....	.20
	Sight feed glass.....	.10
	Gaskets (per doz.).....	.25
27	Handle plate (not shown).....	.15
2593	Tension spring (not shown).....	.05
3771	Tension washer (not shown).....	.05

Fig. 14A

LET US FIGURE ON YOUR ENGINE ROOM OIL AND GREASE REQUIREMENTS

DETROIT ZERO LUBRICATOR

SINGLE CONNECTION

For use in outdoor service, particularly in exposed places subject to cold temperatures where the double connection Zero Lubricator cannot be installed.

Installed on either side of the throttle or into the steam chest direct by using an elbow and short vertical piece of pipe.

Finished with rough body and polished trimmings in either brass or nickel.

Sizes	1/4 Pt.	1/2 Pt.	3/4 Pt.	1 Pt.	1 Qt.
Pipe thread on support arm.....	1/2	1/2	1/2	1/2	1/2
List Price, Brass Finish.....	\$15.00	\$17.00	\$20.00	\$28.00	\$42.00

PARTS FOR DETROIT ZERO LUBRICATOR

Single Connection

1/4 Pint, 1/2 Pint and 3/4 Pint Sizes

Part No.	Name of Part	Price	Part No.	Name of Part	Price
44	Equalizing tube nut.....	\$0.15	205	Packing nut.....	\$0.15
235	Union nut.....	.15	209	Elbow.....	.15
85	Tail piece.....	.25	211	Filler plug.....	.35
168	Sight feed valve stem.....	.25	212	Drain valve body.....	.35
170	Water feed valve stem.....	.25	213	Drain stem.....	.25
201	Body (1/4-pint size).....	1.25	215	Sight feed glass drain stem.....	.25
	Body (1/2-pint size).....	1.50	217	Interior oil tube.....	.25
	Body (3/4-pint size).....	2.00	218	Interior water tube.....	.15
88	Condenser (1/4-pint, 1/2-pint and 3/4-pint sizes).....	1.00	219	Check valve.....	.15
204	Upper sight feed arm.....	.75	221	Heater.....	.15
205	Lower sight feed arm.....	1.00	260	Equalizing tube.....	.20
206	Sight feed gland nuts, each.....	.20		Sight feed glass.....	.10
207	Plug.....	.25		Gaskets (per doz.).....	.25
			3642	Feed nozzle.....	.15

PARTS FOR DETROIT ZERO LUBRICATOR

Single Connection

1 Pint and 1 Quart Sizes

Part No.	Name of Part	Price
44	Equalizing tube nut.....	\$0.15
84	Union nut.....	.15
85	Tail piece.....	.25
168	Sight feed valve stem.....	.25
170	Water feed valve stem.....	.25
228	Body (pint size).....	2.50
	Body (quart size).....	4.00
262	Condenser (pint size).....	1.50
	Condenser (quart size).....	2.00
204	Upper sight feed arm.....	.75
205	Lower sight feed arm.....	1.00
206	Sight feed gland nuts, each.....	.20
207	Plug.....	.25
208	Packing nut.....	.15
209	Elbow.....	.15
231	Filler plug.....	.35
59	Drain valve body.....	.35
58	Drain stem.....	.25
215	Sight feed glass drain stem.....	.25
261	Equalizing tube.....	.20
217	Interior oil tube.....	.25
234	Interior water tube.....	.15
219	Check valve.....	.15
233	Heater.....	.15
	Sight feed glass.....	.10
	Gaskets (per doz.).....	.25
3642	Feed nozzle.....	.15

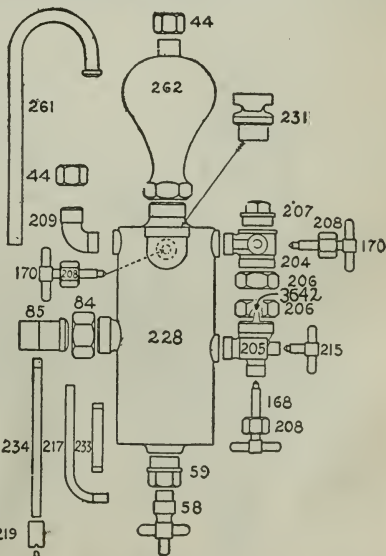


Fig. 220A

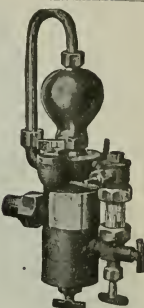


Fig. 220. Single Connection

FOR OILS, GREASES AND GRAPHITE—SEE INDEX

DETROIT IMPROVED ZERO LUBRICATORS

Double Connection

Detroit Zero Lubricators of various kinds are intended for out-of-door use and are designed to feed freely in all temperatures. A cored heating chamber, through which steam passes inside the body of the lubricator, keeps the oil at an even, warm temperature so that the rate of feed does not fluctuate from chilling of the oil.

These lubricators are made for rough service and have metal handles.

With the exception of the Double Connection Zero, all the Zero Lubricators have large condensers which give ample condensation for very fast feeding, if required, and eliminate the necessity of a long condensing pipe so that economy of room is obtained.

For different kinds of service, Detroit Zero Lubricators are made in a number of different styles, which are shown on the following pages.

For use in outdoor service, particularly in places subject to low temperatures, such as on traction engines, portable engines and other steam engines and steam pumps exposed to the cold.

Installed with both connections between the boiler and the throttle.

Finished with rough body and polished trimmings in either brass or nickel.

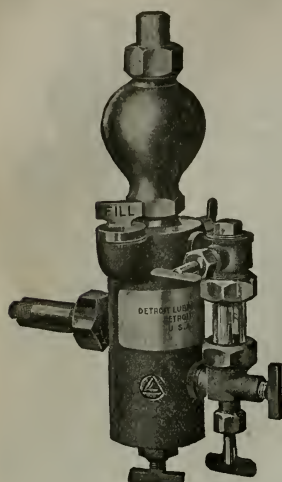


Fig. 205

Sizes	¼ Pt.	⅓ Pt.	½ Pt.	1 Pt.	1 Qt.
Pipe thread on support arm.....	¾	¾	¾	½	½
List price, brass finish.....	\$16.00	\$18.00	\$21.00	\$29.00	\$43.00

PARTS FOR IMPROVED ZERO LUBRICATORS

Double Connection

Styles AX and CX 1 Pint and 1 Quart

Part No.	Name of Part	Price
5	Nut for tail piece.....	\$0.15
6	Tail piece.....	.25
84	Union nut.....	.15
85	Tail piece.....	.25
168	Sight feed valve stem.....	.25
170	Water feed valve stem.....	.25
228	Body (pint size).....	2.50
	Body (quart size).....	4.00
273	Condenser (pint size).....	1.50
	Condenser (quart size).....	2.00
204	Upper sight feed arm.....	.75
205	Lower sight feed arm.....	1.00
206	Sight feed gland nut.....	.20
207	Plug.....	.25
208	Packing nut.....	.15
231	Filler plug.....	.35
59	Drain valve body.....	.35
58	Drain stem.....	.25
215	Sight feed glass drain stem.....	.25
236	Equalizing tube (used only on Style CX).....	.20
217	Interior oil tube.....	.25
234	Interior water tube.....	.15
219	Check valve.....	.15
233	Heater.....	.15
223	Plug for heater.....	.15
	Sight feed glass.....	.10
	Gaskets (per doz.).....	.25
3642	Feed nozzle.....	.15

Note—In ordering parts for Zero Lubricator, be sure and specify whether for Style "AX" or Style "CX."

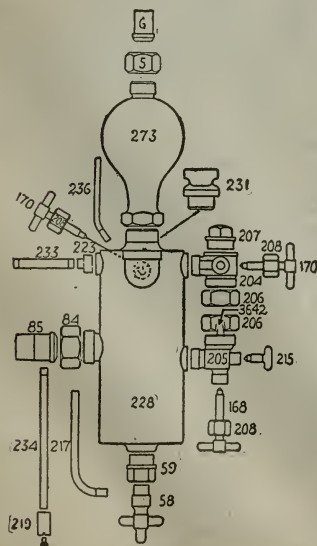


Fig. 205A

DETROIT "500" LUBRICATOR

The Detroit "500" Lubricator is made for all types of gas engines and air compressors. It is easily operated and gives constant lubrication to the cylinder under every condition of service.

The lubricator is made very substantially so as to withstand excessive pressures, vibration and rough usage. It has bull's-eye sight feed and gauge glasses which are easily kept tight and will not break. The filler plug and valves are provided with metal handles.

The lubricator is connected direct to the cylinder, using, if desired, a short piece of pipe and elbow. No separate valve is used as the valve "B" in the support post cuts off the lubricator from the cylinder when it is desired to repack the glasses, clean the lubricator, etc.

The valve "C" (see cut below) controls the admission of oil to the oil passages and should be used to operate the lubricator, making it unnecessary to change the adjustment of valve "A," which need not be disturbed after once being properly regulated.

For use with gas engines and air compressors.

Attached to the air cylinder or installed on the air line. For service where the pressure varies, the "500" Lubricator, with ball check, is furnished. For service where the pressure is constant, as on the air line, the "500A" Lubricator, without any ball check, is furnished. For service where the pressure is from 250 to 500 pounds, the "500X" is furnished. For service where the pressure exceeds 500 pounds the "500XX" is furnished.



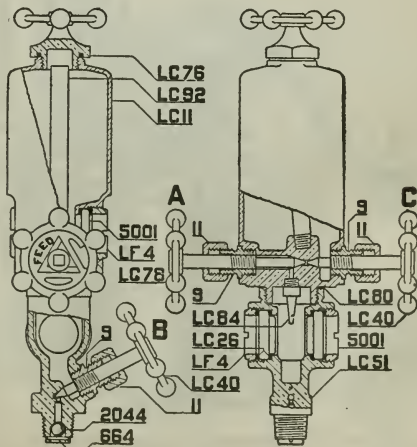
Fig. 500XX

Finished in polished brass or nickel plated.

Sizes	1/2 Pt.	1/2 Pt.	1 Pt.	1 Qt.
"500" Pipe thread on support arm	1/2"	1/2"	1/2"	1/2"
"500A" Pipe thread on support arm	1/2"	1/2"	1/2"	1/2"
"500X" Pipe thread on support arm	1/2"	1/2"	1/2"	1/2"
"500XX" Pipe thread on support arm	3/4"	3/4"	3/4"	3/4"
List Price, Brass Finish	\$15.00	\$19.00	\$27.00	\$42.00

PARTS FOR DETROIT "500" LUBRICATOR

Part No.	Name of Part	Price
LC76	Filler Plug and handle	\$0.70
LC43	Body for qt. size	4.50
LC1	Body for 1 pt. size	3.00
LC11	Body for 1/2 pt. size	2.50
LC9	Body for 1/4 pt. size	2.25
LC10	Body for 1/8 pt. size	2.00
LC27	Body for 1 pt. size (extra heavy)	4.00
LC28	Body for 1/2 pt. size (extra heavy)	3.50
LC29	Body for 1/4 pt. size (extra heavy)	3.25
LC31	Body for 1/8 pt. size (extra heavy)	3.00
5001	Bullseye gauge or sight feed glass	.20
LF4	Tubular sight feed glass (1 1/2 in. x 1 in.)	.15
LF102	Gauge glass packing ring	.25
	Washer or packing for gauge glass (per doz.)	.25
LC7	Post lock nut	.20
LC94	Pressure tube for 1 qt. size	.15
LC83	Pressure tube for 1 pt. size	.15
LC92	Pressure tube for 1/2 pt. size	.15
LC91	Pressure tube for 1/4 pt. size	.15
LC66	Pressure tube for 1/8 pt. size	.15
LC54	Sight feed post, tubular—1/2 in. connection	1.25
LC85	Sight feed post, tubular—3/8 in. connection	1.25
LC51	Sight feed post—bullseye glass pattern—1/2 in. connection	1.25
LC52	Sight feed post—bullseye glass pattern—3/8 in. connection	1.25
2044	Ball choke	.15
664	Choke retainer	.15
LC84	Feed nozzle	.15
LC40	Pressure or supply valve stem and handle complete	.40
LC95	Oil regulating stem and handle, complete (1 qt.)	.40
LC50	Oil regulating stem and handle, complete (1 pt.)	.40
LC78	Oil regulating stem and handle complete (1/2 pt., 1/4 pt., and 1/8 pt.)	.40
11	Packing nuts	.15
9	Center pieces	.25



FOR LUBRICATING AND MACHINE OILS SEE INDEX

DETROIT "KID" LUBRICATORS

For use on small steam engines and small steam pumps.

Fig. 24 Single Connection Detroit Kid Lubricator is for installation where conditions do not permit the use of the Double Connection Kid also shown on this page. It can be connected to the steam pipe or into the steam chest direct by using an elbow and short vertical pipe.

Made in $\frac{1}{8}$ pint size only. Finished in polished brass or nickel plated. Pipe thread on support arm, $\frac{1}{4}$ inch.

List price each, brass.....\$10.00

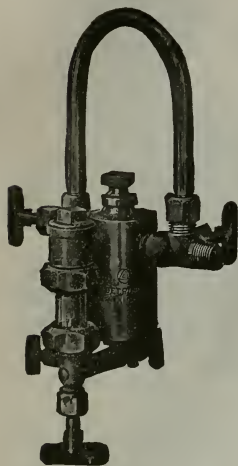


Fig. 24. Single Connection

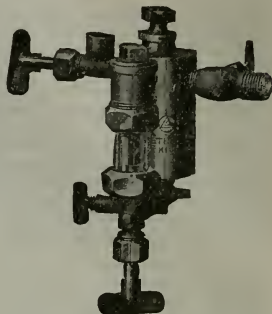


Fig. 25. Double Connection

Fig. 25 Double Connection Kid Lubricator has a sight feed, enabling the operator to tell at all times exactly how much oil is being fed. This advantage makes the Kid preferable to the ordinary plain cylinder lubricator or steam chest oiler often used for the same class of service for which the Kid is designed. Made in $\frac{1}{8}$ pint size only.

Finished in polished brass or nickel plated. Pipe thread on support arm, $\frac{1}{4}$ inch.

List price each, brass.....\$12.00

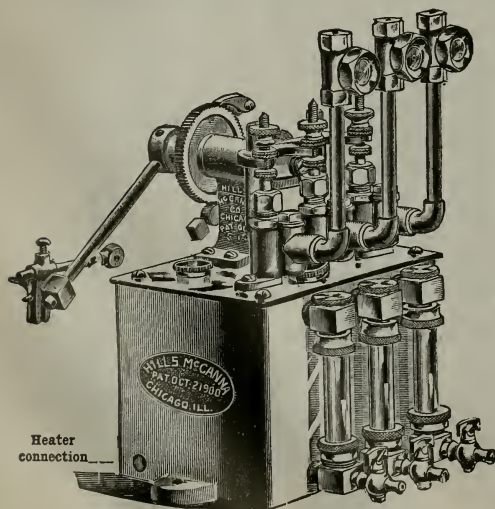


Fig. 27

Triple Pump with Sight Feeds with Heater
for Outside Work

HILLS-McCANNA
LUBRICATOR

Force Feed Mechanical Lubricators.

All lubricators are furnished with heater pipe. Reservoir can be divided into compartments for use of different oils without additional cost.

1	pint, single, metal body.....	\$20.00
1	pint, double feed.....	30.00
1	quart, single, metal body.....	30.00
1	quart, double feed.....	40.00
$\frac{1}{2}$	gallon, triple, metal body.....	55.00
1	gallon, triple, metal body.....	65.00
$1\frac{1}{2}$	gallon, triple, metal body.....	75.00
2	gallon, triple, metal body.....	90.00

We can furnish any style or number of feeds on application—send us your specifications.

OUR STOCK OF ENGINE ROOM SUPPLIES IS ALWAYS COMPLETE

GREASE CUPS, LUBRICATORS AND OIL PUMPS



PEERLESS GREASE CUP

Number	Inside Diameter inches	Pipe Thread inch	Capacity (grease) ounces	Finished Nickle each	Finished Brass each
00	1	1/4	1/4	\$0.82	\$0.70
0	1 1/4	1/4	2/3	1.06	.90
1	1 1/2	1/4	1	1.36	1.15
2	2	3/8	2	1.80	1.50
3	2 1/2	1/2	3 1/2	2.60	2.15
4	3	1/2	5	3.40	2.90

Finished brass only carried in stock.

Fig. 464
"Peerless" Grease Cup

IMPROVED "PARAGON" GLASS BODY SIGHT-FEED LUBRICATOR For Gas, Gasoline or Oil Engines

Size	number	1 1/2	2	3	4	5	6	8
Outside Diam. of Glass.....inches	1 3/4	2	2 1/4	2 1/2	3	3 1/2	4	4 1/4
Height of Glass.....inches	1 1/8	1 7/8	2 1/8	2 3/8	3	4	5	5 1/2
Capacity (Oil).....ounces	1 1/2	2 1/2	4	5	10	18	32	36
Shank Pipe Thread.....inches	1/4	3/8	3/8	3/8	1/2	1/2	1/2	3/4
Nickel Plated.....each	\$2.40	3.25	4.10	4.60	6.25	8.20	16.40	
Finished Brass.....each	\$2.00	2.80	3.50	4.00	5.40	7.00	14.00	

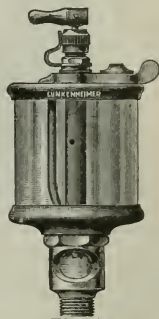


Fig. 471
"Paragon" Lubricator



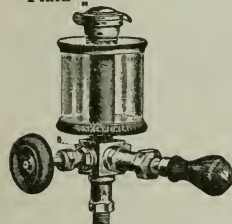
Fig. 471A
Plain

PLAIN ENGINE LUBRICATOR

No.	Diameter inches	Pipe Thread inch	Plain each	Plain, with Cock and Tube each
00	1	3/4	\$2.00	\$3.00
0	1 1/4	3/4	2.20	3.20
1	1 1/2	3/4	2.40	3.40
2	1 3/4	1/2	2.60	3.60
3	2	1/2	2.90	3.90
4	2 1/4	1/2	3.25	4.25
4	2 1/2	1/2	3.75	4.75
6	3	3/4	4.75	5.75
7	3 1/2	3/4	7.00	8.00
8	4	3/4	10.00	11.00



Fig. 471B
With Drip Cock



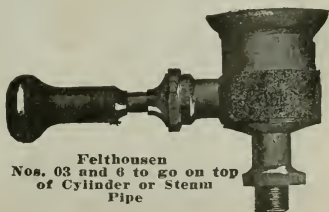
Nos. 3, 04, 4, and 5 to go on side of Cylinder or Steam Pipe

"UNIVERSAL" HAND OIL PUMP

Size	number	3A	5A	6A	8A
Outside Diameter of Glass.....inches	2 1/4	3	3 1/2	4 1/4	
Height of Glass.....inches	2 1/8	3	4	5	
Capacity.....	1/2 Pint	3/4 Pint	1 Pint	1 Quart	
Shank Pipe Thread.....inch	3/8	3/8	1/2	1/2	
Glass Body, Finished Brass.....each	\$ 7.50	\$ 8.50	\$10.00	\$15.00	
Glass Body, nickel plated.....each	8.25	9.50	11.00	16.50	
Brass Body, finished brass.....each	8.30	9.50	11.00	16.50	
Brass Body, nickel plated.....each	9.10	10.30	12.20	18.20	
Extra Glasses.....each	.15	.35	.65	1.50	
Extra Cork Washers.....per doz.	.45	.60	.75	1.50	

FELTHOUSEN PATENT HAND CYLINDER OIL PUMPS

No.	Description	Size inches	With Screw Top, each	With Strainer Top, each	Extra Strainer Top, each
1	Rough, with bowl for tallow	2 x 2	\$ 3.50	\$ 3.50	\$0.30
2	Finished with bowl for tallow	2 x 2	5.00	5.00	.30
03	Finished	2 x 2	3.50	3.65	.40
3	Finished	2 3/4 x 2 3/4	5.00	5.25	.60
3	Finished	2 x 2	3.50	3.65	.40
04	Finished	2 3/4 x 2 3/4	5.00	5.25	.60
4	Finished	3 1/2 x 3 1/2	7.50	7.80	.75
5	Finished	7 x 4 1/2	12.00	12.00	....
	Loco Pump, Gauge Glass and 2-outlet Cock	7 x 4 1/2	20.00	20.00	....



Felthousen
Nos. 03 and 6 to go on top of Cylinder or Steam Pipe

LUNKENHEIMER OIL CUPS



Fig. 4601. "Pioneer"



Fig. 4602. "Royal"



Fig. 4603. "Victor"



Fig. 4604. "Crown"

"PIONEER" SLIDE-TOP GLASS BODY OIL CUP

Number	000	00	0	1	1½	2	3	4	5	6	8
Extreme Outside Diameter of Cup	1-3/16	1%	1½	1¾	2	2-5/16	2-9/16	2¾	3¼	3-13/16	4-9/16
Extreme Height of Cup (over all)	2¾	2-15/16	3-3/16	3¾	4-1/16	4-7/16	4¾	5%	6	7¼	8½
Outside Diameter of Glass	1	1½	1¾	1¾	1¾	2	2¼	2½	3	3½	4¾
Height of Glass	1	¾	1	1¾	1¾	1¾	2¼	2¾	3	4	5
Capacity	¾	1	1½	1¾	1¾	2	2¼	2¾	3	4	5
Shank Pipe Thread	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Finished Brass	\$0.70	\$0.75	\$0.80	\$1.00	\$1.25	\$1.50	\$1.90	\$2.40	\$3.10	\$4.00	\$8.50
Nickel plated	.80	.85	.95	1.20	1.50	1.75	2.20	2.75	3.50	4.50	9.50

"ROYAL" SIGHT-FEED GLASS BODY OIL CUP

Number	000	00	0	1	1½	2	3	4	5	6	8
Extreme Outside Diameter of Cup	1¾	1-7/16	1¾	1¾	2¾	2¾	2-9/16	2-15/16	3%	3-15/16	4-9/16
Extreme Height of Cup (over all)	3	3-9/16	3-13/16	4%	4-9/16	4-15/16	5%	6	6¾	7-15/16	9
Outside Diameter of Glass	1	1½	1¾	1¾	1¾	2	2¼	2½	3	3½	4¾
Height of Glass	¾	1	1¾	1¾	1¾	1¾	2¾	2¾	3	4	5
Capacity	¾	1	1½	1¾	1¾	2	2¼	2¾	3	4	5
Shank Pipe Thread	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Finished Brass	\$0.95	\$1.10	\$1.25	\$1.50	\$1.75	\$2.10	\$2.55	\$3.15	\$3.90	\$4.80	\$10.00
Nickel plated	1.05	1.20	1.40	1.70	2.00	2.35	2.85	3.50	4.30	5.30	12.00

"VICTOR" INDEX GLASS BODY OIL CUP

Number	0	1	1½	2	3	4	5	6	8
Extreme Outside Diameter of Cup (lever included)	2-5/16	2-11/16	2-15/16	3¼	3¾	4	4-11/16	5¼	6¼
Extreme Height of Cup (over all)	3-13/16	4¾	4-13/16	5¼	6	6¾	7-1/16	8¼	9¼
Outside Diameter of Glass	1¼	1½	1¾	2	2¼	2½	3	3½	4¾
Height of Glass	1¾	1¾	1¾	1¾	2¾	2¾	3	4	5
Capacity	¾	1	1½	2½	4	5	10	18	34
Shank Pipe Thread	¾	¾	¾	¾	¾	¾	¾	¾	¾
Finished Brass	\$1.00	\$1.20	\$1.45	\$1.75	\$2.15	\$2.70	\$3.40	\$4.30	\$9.25
Nickel plated	1.15	1.40	1.70	2.00	2.45	3.05	3.80	4.80	10.25

"CROWN" INDEX SIGHT-FEED GLASS BODY OIL CUP

Number	0	1	1½	2	3	4	5	6	8
Extreme Outside Diameter of Cup (lever included)	2-5/16	2-11/16	2-15/16	3¼	3¾	4	4-11/16	5¼	6¼
Extreme Height of Cup (over all)	4½	5-3/16	5¾	6	6-9/16	7-7/16	8¼	9-3/16	10¾
Outside Diameter of Glass	1¼	1½	1¾	2	2¼	2½	3	3½	4¾
Height of Glass	1¾	1¾	1¾	1¾	2¾	2¾	3	4	5
Capacity	¾	1	1½	2½	4	5	10	18	34
Shank Pipe Thread	¾	¾	¾	¾	¾	¾	¾	¾	¾
Finished Brass	\$1.25	\$1.50	\$1.75	\$2.10	\$2.55	\$3.15	\$3.90	\$4.80	\$10.00
Nickel plated	1.40	1.70	2.00	2.35	2.85	3.50	4.30	5.30	12.00

"SENTINEL" SNAP LEVER SIGHT-FEED GLASS BODY OIL CUPS

Number	0	1	1½	2	3	4	5	6	8
Extreme Outside Diameter of Cup	1¾	1¾	2	2¼	2¾	3¼	3¾	4½	
Extreme Height of Cup (over all, Straight Shank, lever up)	5¾	5¾	5-15/16	6¾	6-15/16	7¾	8¾	9	11
Outside Diameter of Glass	1¼	1½	1¾	2	2¼	2½	3	3¾	4¾
Height of Glass	1¾	1¾	1¾	1¾	2¾	2¾	3	4	5
Capacity	¾	1	1½	2½	4	5	10	18	34
Shank Pipe Thread	¾	¾	¾	¾	¾	¾	¾	¾	¾
Finished Brass	\$3.00	\$3.25	\$3.50	\$3.75	\$4.25	\$5.25	\$7.25	\$9.25	\$20.00
Nickel plated	3.50	3.75	4.00	4.25	4.75	5.75	8.00	10.25	22.00
Finished Brass Elbow									
Shank	3.50	3.80	4.10	4.50	5.00	6.00	8.25	9.25	21.50
Nickel plated Elbow									
Shank	4.00	4.30	4.60	5.00	5.50	6.50	9.00	10.25	23.50



Fig. 4605A



Fig. 4605B

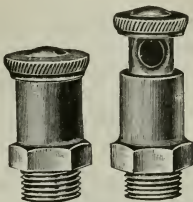
Illustration at left shows straight shank with lever up, cup feeding. At the right is the elbow shank, lever down, and feed stopped.

FOR OIL CUP GLASSES, AND OTHER STYLES OF OIL AND GREASE CUPS, SEE INDEX

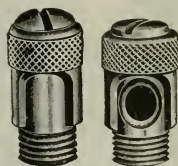
EMPRESS OIL CUPS



Style A



Style B



Style N

Style A

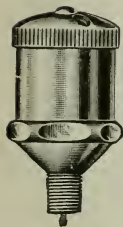
Low setting dustproof cup. For use where space is limited. Edge of cap overhangs and permits filling from oil can spout.

Style B

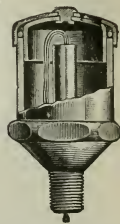
Opened by raising cap, which can be turned to be filled from any direction. Cap closes automatically, cannot jar open and is dustproof.

Style N

Can be used in horizontal or oblique position. Cap is fitted with spring friction fit allowing opening by turning one direction only. Dustproof. Cap will not jar open.



Spindle Wick
Oiler
Fig. 5739



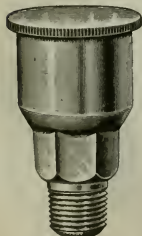
Spindle Wick
Oiler
Cross Section
Fig. 5739A

No.	Stock Thread		Diam. of cap, inches			A, B and N Price per 100 Cups
	Diam. inches	Pitch	A	B	N	
1	$\frac{1}{4}$	32V	$\frac{5}{16}$	$\frac{7}{16}$	$\frac{3}{8}$	\$ 7.00
2	$\frac{5}{16}$	32V	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{7}{16}$	9.50
3*	$\frac{3}{8}$	24V	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	10.70
4*	$\frac{7}{16}$	24V	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{9}{16}$	12.50
5*	$\frac{1}{2}$	24V	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{5}{8}$	16.00

* Style A, No. 4, style B, Nos. 3, 4 and 5, and style N, Nos. 3 and 4 are also furnished for $\frac{1}{4}$ inch pipe thread.

SPINDLE WICK OILER

For use on front axle or king bolt, when lubricating oil is used instead of hard grease. Shank is $\frac{1}{8}$ inch pipe thread, and is furnished in nickel plated finish. Made in one size only. No. 5739. Price.....each \$1.25



Plain Screw
Top Oil Cup

PLAIN SCREW TOP OIL CUP

This type of oiler is made from drawn brass or steel, and is practically indestructible and yet very light in weight.

No.	Diam.	Hgt. Overall	Pipe Th'd.	Opt. Th'd.	Pol. Brass Price per 100	Steel Price per 100
0	$\frac{3}{4}$	1 $\frac{1}{2}$	$\frac{1}{8}$	$\frac{1}{4}$	\$30.00	\$20.00
2	1	2	$\frac{1}{4}$	$\frac{1}{8}$	40.00	30.00
3	1 $\frac{1}{4}$	2 $\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{8}$	60.00	50.00
4	1 $\frac{1}{2}$	2 $\frac{7}{8}$	$\frac{1}{4}$	$\frac{1}{8}$	90.00	65.00

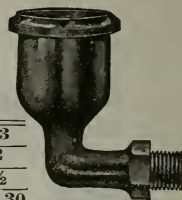
WE ALWAYS FURNISH REGULAR PIPE THREAD UNLESS OPTIONAL THREAD IS SPECIFIED

Fig. 463A.
Plain

THE "MICHIGAN" ALL BRASS OIL CUPS

ELBOW SHANK OILER

Number	17	18	19	20	21	22	23
Diameter inches	$\frac{3}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Threaded Iron Pipe size	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$
Each	\$0.50	\$0.70	\$0.80	\$1.00	\$1.40	\$1.80	\$2.30

Fig. 463B.
Elbow Shank.

PLAIN BRASS OILER

Number	00	0	1	2	3	4	5	6	7	8	9	10
Diameter inches	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$
Threaded Iron Pipe...size	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$
Each	\$0.25	\$0.30	\$0.35	\$0.40	\$0.50	\$0.60	\$0.90	\$1.25	\$1.75	\$2.25	\$2.75	\$3.60
Add to list for Brass Tubes	.10	.10	.10	.10	.10	.15	.15	.15	.15	.20	.20	.20



Fig. 463C. Plain

Fig. 463E. "Snap Lever"
Sight Feed Oiler.

THE MICHIGAN PLAIN GLASS OIL CUP

No.	Cap. ounces	Shank Pipe Thread	Diameter Glass	Height Glass	Brass Finish each
90	$\frac{1}{2}$	$\frac{1}{8}$	$1\frac{1}{8}$	1	\$1.30
91	$\frac{3}{4}$	$\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{8}$	1.35
92	1	$\frac{1}{4}$	$1\frac{5}{8}$	$1\frac{3}{8}$	1.70
93	$1\frac{1}{2}$	$\frac{1}{4}$	$1\frac{3}{4}$	$1\frac{1}{2}$	2.15
94	$2\frac{1}{2}$	$\frac{3}{8}$	2	$1\frac{3}{4}$	2.65
95	4	$\frac{3}{8}$	$2\frac{3}{8}$	$2\frac{1}{8}$	3.30
96	6	$\frac{3}{8}$	$2\frac{3}{4}$	$2\frac{1}{2}$	4.00
97	10	$\frac{1}{2}$	$3\frac{1}{8}$	$2\frac{7}{8}$	5.35
98	Pint	$\frac{1}{2}$	$3\frac{1}{2}$	4	6.65

THE MICHIGAN "SNAP LEVER" SIGHT FEED OILER

No.	Capacity ounces	Shank Pipe Thread	Diameter Glass	Brass Finish each
121	$\frac{3}{4}$	$\frac{1}{8}$	$1\frac{1}{4}$	\$ 2.50
122	1	$\frac{1}{4}$	$1\frac{1}{8}$	2.70
123	$1\frac{1}{2}$	$\frac{1}{4}$	$1\frac{3}{4}$	2.90
124	$2\frac{1}{2}$	$\frac{3}{8}$	2	3.15
125	4	$\frac{3}{8}$	$2\frac{3}{8}$	3.50
126	6	$\frac{3}{8}$	$2\frac{3}{4}$	5.20
127	10	$\frac{1}{2}$	$3\frac{3}{8}$	6.00
128	Pint	$\frac{1}{2}$	$3\frac{1}{2}$	7.50
129	Quart	$\frac{3}{4}$	$4\frac{1}{8}$	13.00



Fig. 461A.

CYLINDRICAL AND URN-SHAPED GLASSES

Number	000	00	0	1	$1\frac{1}{2}$	2	3	4	5	6	8
Outside Dia. of Cyl. Glasses	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	$4\frac{1}{4}$
Height of Cyl. Glasses in.	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{4}$	3	4	5
Outside Dia. of top of Urn-Shaped Glasses in.	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	1	2	$2\frac{1}{4}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	...	...
Height of Urn-Shaped Glasses	$1\frac{1}{2}$	1	$1\frac{1}{8}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	$4\frac{1}{2}$	...
Cylindrical or Urn- Shaped Glasses .. each	\$0.5	\$0.6	.08	.10	.10	.12	.15	.25	.35	.65	1.50
Cork Washers per doz.	.15	.18	.24	.30	.36	.40	.45	.50	.60	.75	1.50



Fig. 461B.

LUNKENHEIMER PATENT DRIP AND SIGHT-FEED VALVES, WIPER CUPS, ETC.

OILING DEVICES FOR ENGINE AND MACHINERY BEARINGS

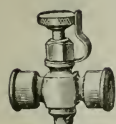


Fig. 3391

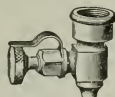


Fig. 3392



Fig. 3393



Fig. 3394



Fig. 3395

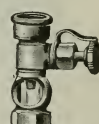


Fig. 3396



Fig. 3397



Fig. 3398



Fig. 3399

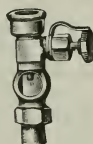


Fig. 3400



Fig. 3401



Fig. 3402



Fig. 3403



Fig. 3404



Fig. 3405



Fig. 3406



Fig. 3407



Fig. 3408



Fig. 3409



Fig. 3410



Fig. 3411

Size..... inch		Brass Finished		Nickel Plated	
		1/8, 1/4, 3/8	1/2	1/8, 1/4, 3/8	1/2
Fig. 3391.	Cross Drip Valve..... each	\$1.50	\$1.60	\$1.75	\$1.85
Fig. 3392.	Straight Drip Valve..... "	1.25	1.40	1.50	1.65
Fig. 3393.	Angle Drip Valve..... "	1.25	1.40	1.50	1.65
Fig. 3394.	Corner Drip Valve..... "	1.50	1.60	1.75	1.85
Fig. 3395.	Cross Sight-feed Valve..... "	2.30	3.20	2.60	3.50
Fig. 3396.	Straight Sight-feed Valve..... "	2.00	3.00	2.25	3.25
Fig. 3397.	Angle Sight-feed Valve..... "	2.00	3.00	2.25	3.25
Fig. 3398.	Corner Sight-feed Valve..... "	2.30	3.20	2.60	3.50
Fig. 3399.	Cross Sight-feed Valve with Union..... "	2.80	3.70	3.10	4.00
Fig. 3400.	Straight Sight-feed Valve with Union..... "	2.50	3.50	2.80	3.80
Fig. 3401.	Angle Sight-feed Valve with Union..... "	2.50	3.50	2.80	3.80
Fig. 3402.	Corner Sight-feed Valve with Union..... "	2.80	3.70	3.10	4.00
Fig. 3403.	Adjustable Wiper Cup for Wick, straight Shank..... "	2.50	3.00	3.00	3.50
Fig. 3404.	Adjustable Wiper Cup for Wick, Elbow Shank..... "	3.00	3.50	3.50	4.00
Fig. 3405.	Adjustable Crankpin Wiper Cup..... "	2.50	3.00	3.00	3.50
Fig. 3406.	Adjustable Plain Wiper Cup, Elbow Shank..... "	3.00	3.50	3.50	4.00
Fig. 3408.	Adjustable Plain Wiper Cup, Straight Shank..... "	2.50	3.00	3.00	3.50
Fig. 3409.	Horizontal Wick Wiper Tip..... "	2.00	2.30	2.30	2.60
Fig. 3410.	Wiper Tips..... "	.40	.50	.50	.60

Fig. 3407. PLAIN WIPER CUP

Pipe Th'd	O. Diam.	Brass	Nickel Pl.
3/4	1 1/4	\$1.00	\$1.20
1	1 1/2	1.50	1.75
1 1/2	2	2.00	2.40
..

Fig. 3411. DRIP TROUGHS

Length in.	Pipe Th'd	Rough	Finished	Nickel Pl.
3	3/4	\$0.75	\$1.00	\$1.25
5	3/8	1.00	1.50	2.00
7	1/2	1.50	2.00	2.75
9	1/2	2.00	2.75	3.50

LUNKENHEIMER GREASE CUPS

Fig. 4621A. "IDEAL" AUTOMATIC GREASE CUP

Number	00	0	1	2	3	4	5
Inside diameter.....in.	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$
Extreme outside diam. " "	$1\frac{1}{8}$	$1\frac{3}{8}$	2	$2\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{5}{8}$	$4\frac{1}{4}$
Extreme height over all (plunger raised, cup open) " "	$3\frac{1}{4}$	4	$5\frac{1}{4}$	$6\frac{1}{2}$	$7\frac{1}{2}$	8	$9\frac{3}{4}$
Shank pipe thread..... " "	$\frac{7}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$
Capacity (grease).....oz.	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{2}$	3	6	10	18
Finished brass.....each	\$1.50	\$2.00	\$2.50	\$3.20	\$4.30	\$6.00	\$12.50
Nickel plated..... " "	1.75	2.25	2.80	3.60	5.00	6.75	13.80

Fig. 4621A
Ideal ExteriorFig. 4622A
Jewel ExteriorFig. 4623A
Marine ExteriorFig. 4624A
Tiger ExteriorFig. 4625
Surety Cup

Fig. 4622A. "JEWEL" AUTOMATIC GREASE CUP

Number	00	0	1	2	3	4
Inside diameter.....in.	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	$2\frac{3}{4}$
Extreme outside diameter..... " "	$1\frac{1}{8}$	$1\frac{3}{8}$	2	$2\frac{1}{2}$	$3\frac{1}{8}$	$3\frac{5}{8}$
Extreme height over all (plunger raised, cup open) " "	$3\frac{1}{4}$	$3\frac{3}{4}$	$4\frac{3}{4}$	$5\frac{5}{8}$	$6\frac{7}{8}$	$8\frac{1}{2}$
Shank pipe thread..... " "	$\frac{7}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$
Capacity (grease).....oz.	$\frac{1}{2}$	1	$1\frac{1}{2}$	3	6	10
Finished brass.....each	\$0.80	\$1.00	\$1.30	\$1.70	\$2.30	\$3.20
Nickel plated..... " "	1.00	1.30	1.70	2.20	2.90	3.90

Fig. 4623A. SCREW FEED "MARINE" GREASE CUP

Number	00	0	1	2	3	4	5
Inside diameter.....in.	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	$2\frac{3}{4}$	$3\frac{1}{4}$
Extreme outside diam. " "	$1\frac{1}{8}$	$1\frac{3}{8}$	2	$2\frac{1}{2}$	$3\frac{1}{8}$	$3\frac{5}{8}$	$4\frac{1}{4}$
Extreme height over all (plunger raised, cup open) " "	$3\frac{3}{8}$	4	$5\frac{1}{8}$	$6\frac{7}{8}$	$7\frac{7}{8}$	$8\frac{3}{4}$	$10\frac{1}{4}$
Shank pipe thread..... " "	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$
Capacity (grease).....oz.	$\frac{1}{2}$	1	$1\frac{1}{2}$	3	6	10	18
Finished brass.....each	\$1.00	\$1.20	\$1.60	\$2.00	\$2.80	\$4.00	\$7.00
Nickel plated..... " "	1.20	1.45	1.90	2.40	3.40	4.75	8.20

Fig. 4624A. "TIGER" PLAIN BRASS GREASE CUP

Number	00	0	1	2	3	4
Inside diameter.....in.	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{3}{4}$
Extreme outside diam., finished pattern..... " "	$1\frac{1}{8}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{3}{8}$	$3\frac{1}{8}$
Extreme height over all (cup open), finished pattern..... " "	$1\frac{1}{2}$	2	$2\frac{1}{8}$	$2\frac{3}{8}$	$2\frac{7}{8}$	$3\frac{1}{4}$
Extreme outside diam., rough pattern..... " "	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{2}$	$2\frac{1}{4}$	$2\frac{3}{4}$	$3\frac{1}{4}$
Extreme height over all (cup open), rough pattern..... " "	$1\frac{1}{8}$	$2\frac{1}{8}$	$2\frac{3}{8}$	$2\frac{5}{8}$	$2\frac{7}{8}$	$3\frac{3}{8}$
Shank pipe thread..... " "	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$
Capacity (grease).....oz.	$\frac{1}{2}$	$\frac{1}{2}$	1	2	$3\frac{1}{2}$	5
Finished brass.....each	\$0.70	\$0.90	\$1.15	\$1.50	\$2.15	\$2.90
Finished brass, nickel plated..... " "	.82	1.06	1.36	1.80	2.60	3.40
Rough brass..... " "	.56	.74	.96	1.28	1.76	2.30

Fig. 4625. "SURETY" GREASE CUPS

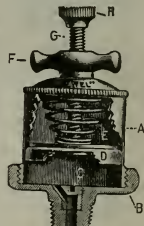
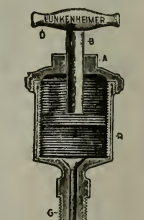
With Wing Handle on Cap

Number	00	0	1	2	3	4
Inside diameter.....in.	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{3}{4}$
Extreme outside diameter..... " "	$1\frac{1}{8}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{3}{8}$	$3\frac{1}{8}$
Shank pipe thread..... " "	$\frac{7}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$
Capacity (grease).....oz.	$\frac{1}{2}$	$\frac{1}{2}$	1	2	$3\frac{1}{2}$	5
Finished brass.....each	\$0.85	\$1.05	\$1.35	\$1.80	\$2.40	\$3.60
Finished brass, nickel plated..... " "	.95	1.15	1.50	2.00	2.70	3.90
Rough steel.....each	.70	.90	1.15	1.50	2.00	3.00

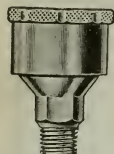
Fig. 4625B. PLAIN STEEL GREASE CUP

Number	00	0	1	2	3	4
Inside diameter.....in.	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Shank pipe thread..... " "	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$
Height over all..... " "	$1\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{1}{8}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$3\frac{1}{4}$
Capacity (grease).....oz.	$\frac{1}{2}$	$\frac{1}{2}$	1	2	$3\frac{1}{2}$	5
Rough steel.....each	\$0.25	\$0.35	\$0.45	\$0.55	\$0.80	\$1.05

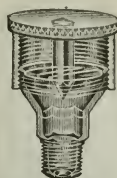
FOR OTHER STYLES OF GREASE AND OIL CUPS, SEE INDEX

Fig. 4621B
Ideal SectionalFig. 4622B
Jewel SectionalFig. 4623B
Marine SectionalFig. 4624B
Tiger SectionalFig. 4625B
Plain Steel Cup

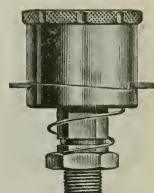
EMPRESS GREASE CUPS



Plain No. 200



Winkley Ratchet No. 249



Empress Ratchet No. 209

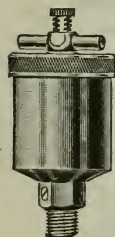
Fig. 200 Plain, pressed metal cup, light weight, large capacity, moderate priced.

Fig. 209 Ratchet, pressed metal cup with positive locking cap to be used where vibration is excessive. Bottom is held in lower position in groove for filling.

Fig. 249 Ratchet. Same as Fig. 200, but fitted with a simple effective locking device. Lock is electrically welded in cap, prevents same from jarring off.

No.	000	00	0	1	2	3	4
Inside Diameter .....in.	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Shank Pipe Thread....."	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$
Capacity, Grease	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	2	$3\frac{1}{2}$	5
No. 200, Plain, Steel .....each	\$0.40	\$0.50	\$0.65	\$0.80	\$1.05	\$1.45	\$2.00
No. 200, Plain, Dull Brass....."	.46	.56	.74	.96	1.28	1.76	3.00
No. 249, Winkley Ratchet, Steel....."	.69	.82	.99	1.18	1.52	2.27	...
No. 249, Winkley Ratchet, Dull Brass.."	.76	.90	1.14	1.43	1.88	2.71	...
No. 209, Empress Ratchet, Steel....."	.70	.80	.95	1.15	1.40	2.00	...
No. 209, Empress Ratchet, Dull Brass.."	.90	1.10	1.35	1.70	2.30	3.10	...

No. 215 SPRING COMPRESSION GREASE CUPS



No. 215

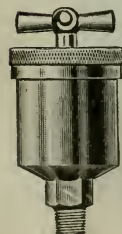
No.	00	0	1	2	3	4
Inside Diameter...in.	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	$2\frac{3}{4}$
Extreme Height (Plunger raised).	$2\frac{3}{4}$	$4\frac{1}{8}$	$5\frac{5}{8}$	$6\frac{7}{8}$	$7\frac{5}{8}$	$8\frac{3}{4}$
Capacity .....oz.	$\frac{1}{2}$	1	$1\frac{1}{2}$	3	6	10
Pipe Thread ....in.	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$
Polished Brass.each	\$1.50	\$2.00	\$2.50	\$3.20	\$4.30	\$5.60
Steel "	1.30	1.50	1.75	2.00	2.75	3.60



No. 215
Cross Section

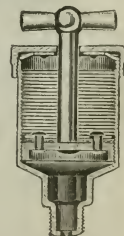
No. 214 MARINE COMPRESSION GREASE CUP

With Leather Packed Plunger and Lock Cap



No. 214

No.	00	0	1	2	3	4
Inside Diameter...in.	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	$2\frac{3}{4}$
Extreme Height (Plunger raised).	$3\frac{1}{2}$	$4\frac{1}{8}$	$5\frac{1}{8}$	$6\frac{7}{8}$	$7\frac{5}{8}$	$8\frac{3}{4}$
Capacity .....oz.	$\frac{1}{2}$	1	$1\frac{1}{2}$	3	6	10
Pipe Thread ....in.	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$
Polished Brass.each	\$1.30	\$1.52	\$1.95	\$2.37	\$3.20	\$4.20
Steel "	1.10	1.27	1.50	1.72	2.15	2.70



No. 214
Cross Section

THE PEERLESS



Fig. 478A

These are made of No. 26 galvanized iron up to 165 gallons; above of heavier material, with a 4 inch screw filler cap and a ¾ inch ground key brass faucet.

Capacity, Gallons	Each
30	\$ 5.00
60	6.00
110	7.50
165	11.50
215	14.70

KEROSENE CANS

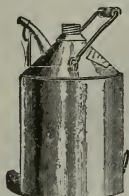


Fig. 478D Per doz.

1 gal. tin.....	\$3.00
2 gal. tin	4.00
1 gal. galvanized iron....	5.50
2 gal. galvanized iron....	7.00

OILY WASTE CAN



Fig. 478G

Inspected and labeled "Approved by the Underwriters' Laboratories, Inc., Chicago, under the direction of the National Board of Fire Underwriters."

Made of heavy galvanized iron with simple self-closing tight-hinged cover, no springs. Has heavy band iron legs, securely riveted, raising body of can four inches from the floor.

No.	Can Size Dia., in.	Ht. in.	Cap. gal.	Each
11	11½	12	6	\$1.75
22	14½	14½	10	2.25
33	16½	17	14	3.00
44	18½	20½	24	4.00
55	22	25½	40	5.50

OIL TANKS, CANS AND PUMPS
THE ACME

Fig. 478B

Cap. gal.	Diam. in.	Height in.	Weight lbs.	Each
30	22	27	35	\$ 4.60
60	25	31	50	5.20
110	30	37	65	8.50
165	37	37	85	12.50

SEAVEY OIL PUMPS

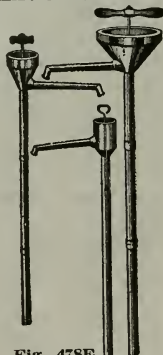


Fig. 478E

Made of heavy X tin; the Nos. 10 and 15 are reinforced at joints; all have brass valves, and we believe are the best on the market.

No. 5.	1¼x32 inches.....	each	\$1.20
No. 10.	1½x54 inches.....	"	3.00
No. 15.	1½x78 inches.....	"	3.50

HEAVY MEASURES, SINGLE LIP
Galvanized Iron

Fig. 478H

Each	Each
1 gallon.....\$1.25	3 gallons....\$3.25
2 gallons..... 2.00	5 gallons.... 3.25

Tin

Per doz.	Per doz.
¾ pint.....\$1.50	1 quart.....\$2.25
½ pint..... 1.50	2 quarts.... 3.50
1 pint..... 1.85	1 gallon.... 5.00

THE WEISE

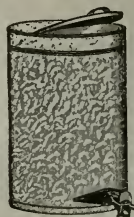


Fig. 478C

These tanks are made of No. 26 galvanized iron with a hinged cover and 1¼ inch perfection gate.

Are used for lubricating oils and varnish.

Cap. gal.	Diam. in.	Hgt. in.	Wt. lbs.	Each
30	22	24	30	\$5.50
60	22	36	40	6.00
110	30	36	60	9.50

FAUCET CANS



Fig. 478F

5 gal. tin, ¾ brass faucet	each	\$1.75
10 gal. tin, ¾ brass faucet	each	2.25
5 gal. galvanized iron ¾ brass faucet....	each	2.25
10 gal. galvanized iron, ¾ brass faucet....	each	2.75

WOOD JACKET CANS

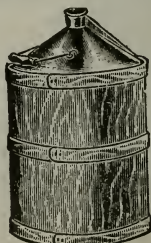


Fig. 478I

1 gal. tin jacket can....	each	\$0.40
2 gal. tin jacket can....	each	.55
3 gal. tin jacket can....	each	.70
5 gal. tin jacket can....	each	.85
10 gal. tin jacket can....	each	1.50

OILERS' AND ENGINEERS' SETS



Fig. 476A



Fig. 476B



Fig. 2000

Fig. 476A TIN AND COPPER VALVE STOP OILERS

Number	1	3	5	6	7
Capacity	3	2	2	1	1
Height	32	27	21	17	12
Price, tin	12.00	12.00	12.00	10.00	10.00
*Price, copper	24.00	24.00	20.00	20.00	18.00

*Not carried in stock, furnished to order only.

Fig. 476B ENGINEERS' TIN DRIP OILERS

1 pint, 6½ inch spout.....	per doz.	\$3.75
1½ pint, 7 inch spout.....	"	4.25
1 quart, 7 inch spout.....	"	4.50
1 quart, 12 inch spout.....	"	5.00
1 quart, 18 inch spout.....	"	5.50

Fig. 2000. COPPER PLATED STEEL PUMP OILERS

Seamless steel cup bottom. Fewer soldered joints. Valves and pump can be inspected. Pump inside, out of the way. Threads standard size so nozzles can be changed to other lengths. Finest and most accurate mechanism on the market.

Size 1000. 1 pint, 3¾ in. diameter, 9 in. nozzle.....	per doz.	\$30.00
Size 2000. 1½ pint, 3¾ in. diameter, 12 in. nozzle.....	"	40.00
Size 3000. 1 quart, 4½ in. diameter, 15 in. nozzle.....	"	50.00

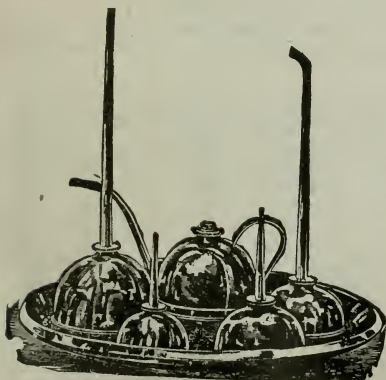


Fig. C30

COPPER PLATED STEEL ENGINEERS' SETS

Heavy plated in copper and handsomely finished.

WITH ROUND TRAYS

Fig. C30. Five pieces, copper plated, including tray..	\$5.00
Fig. C40. Six pieces, copper plated, including tray..	7.00

COPPER PLATED STEEL STEAMBOAT SETS

Not Illustrated

ROUND DOUBLE TRAYS

The Steamboat Sets are so constructed that, in spite of the motion of the boat, the Oilers will remain in their places.

Fig. C70. Five pieces, copper plated, including tray.. \$6.00

Fig. C80. Six pieces, copper plated, including tray.. 9.00

FOR ENGINE AND MACHINE OILS, SEE INDEX

STEEL OIL CANS



Fig. 503



Fig. 501

Fig. 00
Chace Pattern

Fig. 404



Fig. 406

Figs. 404-406 "EVERLASTING" BRAZED STEEL BENCH OILER

With brazed steel bottoms and heavy drop forged body. The bottom will never lose its elasticity. Guaranteed for five years' service.

It is brazed or soldered with hard solder, and is the only oiler than can be placed on any fire to heat the oil in cold weather without melting the bottom out. It has a steel-spring bottom, brazed to drop forged steel body, making it the most durable oiler on the market. It will not corrode or choke up the nozzle with verdigris. The nozzle is made of steel, case-hardened at the point, and has a large opening at body, making it easy to fill.

Spout and body polished. Extra heavy steel nozzle. Solid cut-brass bushing. Nozzle, 6 inch and upwards furnished bent unless otherwise ordered. All lengths interchangeable.

Size	Per doz.	Size	Per doz.
100. $\frac{1}{8}$ pint, 2 $\frac{3}{4}$ in. dia., 2 $\frac{1}{2}$ in. nozzle.....	\$4.00	404. $\frac{3}{4}$ pint, 4 $\frac{1}{2}$ in. dia., 4 in. nozzle.....	\$7.00
104. $\frac{1}{8}$ pint, 2 $\frac{3}{4}$ in. dia., 4 in. nozzle.....	4.50	406. $\frac{3}{4}$ pint, 4 $\frac{1}{2}$ in. dia., 6 in. nozzle.....	7.50
204. $\frac{1}{2}$ pint, 3 $\frac{3}{4}$ in. dia., 4 in. nozzle.....	5.00	409. $\frac{3}{4}$ pint, 4 $\frac{1}{2}$ in. dia., 9 in. nozzle.....	8.00
206. $\frac{1}{2}$ pint, 3 $\frac{3}{4}$ in. dia., 6 in. nozzle.....	5.50	504. 1 pint, 4 $\frac{1}{2}$ in. dia., 4 in. nozzle.....	8.00
209. $\frac{1}{2}$ pint, 3 $\frac{3}{4}$ in. dia., 9 in. nozzle.....	6.00	506. 1 pint, 4 $\frac{1}{2}$ in. dia., 6 in. nozzle.....	8.50
304. $\frac{1}{2}$ pint, 3 $\frac{3}{4}$ in. dia., 4 in. nozzle.....	6.00	509. 1 pint, 4 $\frac{1}{2}$ in. dia., 9 in. nozzle.....	9.00
306. $\frac{1}{2}$ pint, 3 $\frac{3}{4}$ in. dia., 6 in. nozzle.....	6.50	512. 1 pint, 4 $\frac{1}{2}$ in. dia., 12 in. nozzle.....	9.00
309. $\frac{1}{2}$ pint, 3 $\frac{3}{4}$ in. dia., 9 in. nozzle.....	7.00		

Figs. 501-503 "INDESTRUCTIBLE" POLISHED STEEL OILERS

This Oiler is made with a heavy steel body. The bottom is made of tempered spring steel.

The can is so constructed that no braze or solder is used on the outside, so if it becomes somewhat heated in melting oil, there is nothing on the outside that will melt.

Size	Per doz.	Size	Per doz.
501. $\frac{1}{8}$ pint, 3 $\frac{3}{4}$ in., 3 in. straight	\$4.75	509. $\frac{3}{4}$ pint, 4 $\frac{1}{2}$ in., 3 in. straight	\$6.75
502. $\frac{1}{8}$ pint, 3 $\frac{3}{4}$ in., 4 in. straight	5.00	510. $\frac{3}{4}$ pint, 4 $\frac{1}{2}$ in., 4 in. straight	7.00
503. $\frac{1}{8}$ pint, 3 $\frac{3}{4}$ in., 6 in. bent	5.50	511. $\frac{3}{4}$ pint, 4 $\frac{1}{2}$ in., 6 in. bent	7.50
504. $\frac{1}{8}$ pint, 3 $\frac{3}{4}$ in., 9 in. bent	6.00	512. $\frac{3}{4}$ pint, 4 $\frac{1}{2}$ in., 9 in. bent	8.00
505. $\frac{1}{2}$ pint, 3 $\frac{3}{4}$ in., 3 in. straight	5.75	513. $\frac{1}{2}$ pint, 4 $\frac{1}{2}$ in., 3 in. straight	7.75
506. $\frac{1}{2}$ pint, 3 $\frac{3}{4}$ in., 4 in. straight	6.00	514. 1 pint, 4 $\frac{1}{2}$ in., 4 in. straight	8.00
507. $\frac{1}{2}$ pint, 3 $\frac{3}{4}$ in., 6 in. bent	6.50	515. 1 pint, 4 $\frac{1}{2}$ in., 6 in. bent	8.50
508. $\frac{1}{2}$ pint, 3 $\frac{3}{4}$ in., 9 in. bent	7.00	516. 1 pint, 4 $\frac{1}{2}$ in., 9 in. bent	9.00

Fig. 00 CHACE PATTERN ZINC OIL CANS

Number	00	0	1	2	3	4	5	6
Diameter of bottom.....	2 $\frac{1}{8}$	2 $\frac{1}{8}$	2 $\frac{5}{8}$	3 $\frac{1}{8}$	3 $\frac{3}{8}$	4 $\frac{1}{8}$	4 $\frac{1}{2}$	4 $\frac{3}{4}$
Length of spout.....	2 $\frac{1}{8}$	2 $\frac{1}{8}$	2 $\frac{1}{8}$	4 $\frac{1}{4}$	4 $\frac{1}{4}$	5	5	5
Capacity.....	1 $\frac{1}{4}$	1 $\frac{1}{4}$	2	4	6 $\frac{1}{2}$	8 $\frac{1}{2}$	11	14
Fluid oz.	1.00	1.25	1.50	2.00	2.25	2.75	3.50	4.50
Zinc bodies, tin bottoms and spouts.....	1.25	1.50	1.75	2.50	3.00	3.50	4.50	5.50
*Add for copper-plating, net .....	.95	1.00	1.05	1.30	1.45	1.60	1.75	1.85
*Add for brass-plating, net	1.10	1.15	1.25	1.50	1.65	1.85	2.00	2.10
*All brass .....	..	2.25	2.50	3.50	4.00	4.75	6.00	7.50
*Copper bodies, brass bottoms and spouts.....	..	2.50	2.75	3.75	4.25	5.00	6.25	8.00

*Not carried in stock, furnished to order only.

COPPER PLATED STEEL OILERS AND FILLERS

Please Order by Numbers, to Avoid Mistakes
We Carry a Full Line in Stock

WIDE MOUTH COPPER PLATED STEEL OILERS



Fig. 14B



Fig. 13



Fig. 19



Fig. 212

These oilers have the collar attached to body of can and cap to spout without soldering or brazing, making practically solid joints. Threads are machine cut. Copper plated inside and outside. Will not rust. Clock spring steel bottoms.

Size 12.	Steel Oiler,	3 oz.,	2 3/4 in. diameter,	3 in. nozzle	per doz.	\$4.50
Size 13.	Steel Oiler,	5 oz.,	3 3/8 in. diameter,	3 in. nozzle	"	5.50
Size 13A.	Steel Oiler,	5 oz.,	3 3/8 in. diameter,	5 in. nozzle	"	6.00
Size 14.	Steel Oiler,	5 oz.,	3 3/8 in. diameter,	9 in. nozzle	"	6.50
Size 14A.	Steel Oiler,	1/2 pt.,	3 3/8 in. diameter,	3 in. nozzle	"	7.50
Size 14AA.	Steel Oiler,	1/2 pt.,	3 3/8 in. diameter,	5 in. nozzle	"	8.00
Size 14B.	Steel Oiler,	1/2 pt.,	3 3/8 in. diameter,	9 in. nozzle	"	8.50
Size 15.	Steel Oiler,	1 pt.,	4 1/4 in. diameter,	3 in. nozzle	"	9.25
Size 15A.	Steel Oiler,	1 pt.,	4 1/4 in. diameter,	5 in. nozzle	"	9.75
Size 16.	Steel Oiler,	1 pt.,	4 1/4 in. diameter,	9 in. nozzle	"	10.50

Fig. 19 COPPER PLATED ENGINEERS' FILLERS

These Fillers are made of very heavy stock, handsomely finished in copper plate. Heavily copper plated inside and out.

Size 19.	1 pint	Steel Filler,	4 1/2 in. diameter,	3 1/2 in. high, screw top	per doz.	\$14.00
Size 19A.	1 1/2 pint,	4 1/2 in. diameter,	4 in. high, screw top	"	"	17.00
Size 210.	1 quart,	5 in. diameter,	5 in. high, screw top	"	"	20.00
Size 211.	2 quart,	6 in. diameter,	6 in. high, screw top	"	"	24.00

Fig. 212 COPPER PLATED STEEL TALLOW POTS

Made of very heavy stock, have an extra large spout, and two inch filling opening, with tapered metal plug attached to the handle by a chain. Heavily copper plated inside and out.

Size 212.	1 quart,	5 in. diameter,	5 in. high	per doz.	\$21.00
Size 213.	2 quart,	6 in. diameter,	6 in. high	"	25.00

Wide Mouth Copper Plated Steel

RAILROAD OILERS

Heavily copper plated inside.

Please order by number and avoid mistakes.

These Oilers have seamless drawn bodies, are indestructible, and are used by the leading railroads of the country.

Spouts have a union connection where spout joins body of oiler, enabling it to be placed in any position for delivering oil.

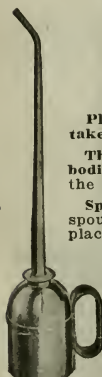


Fig. 10

	Per doz.
Fig. 10. 1 pt. Railroad Oiler, 3 3/8 in. diam., 5 in. high, 12 in. nozzle	\$14.00
Fig. 10 1/2. 1 1/2 pt., 3 3/8 in. diam., 5 1/2 in. high, 12 in. nozzle	16.00
Fig. 11. 1 quart, 4 1/4 in. diam., 6 in. high, 18 in. nozzle	18.00

Improved Standard Copper Plated Steel

RAILROAD OILERS

The regular standard sizes and patterns, used on all railroads. They are made of two heavy steel seamless drawn parts, with large nozzles, 1 1/2 in. at base, 10 to 14 in. in length. Specially adapted for locomotives and stationary engines. Spouts have a union connection where spout joins body of oiler, enabling it to be placed in any position for delivering oil. Heavily copper plated.

	Per doz.
Fig. 100. 1 pt. Railroad Oiler, 3 3/8 in. diam., 6 1/4 in. high, 10 in. nozzle	\$14.00
Fig. 101. 1 quart, 4 1/4 in. diam., 6 in. high, 12 in. nozzle	18.00
Fig. 111. 2 quart, 5 in. diam., 8 in. high, 14 in. nozzle	20.00

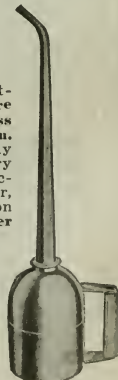


Fig. 111

FOR EXTRA SPOUTS TO FIT ALL ABOVE OILERS, SEE INDEX

CANNON AND PUMP OILERS

AUTOMOBILE PUMP OILERS

COPPERIZED STEEL



Fig. 800

Made of 20 gauge cold rolled steel, heavily copper plated and lacquered. The body is drawn seamless in one piece. Oiler is designed for automobiles, stationary engines, power boats, etc. It is equipped with a special pump and the delivery of oil can be regulated by the distance of the stroke of the plunger. Oiler is equipped with a strainer to prevent clogging of the valves and spouts. Order by figure number.

Fig. 800.	½ pint,	3 ¾ inch	diameter,	3 inch	nozzle.....	Per doz.	\$23.00
Fig. 801.	½ pint,	3 ¾ inch	diameter,	5 inch	nozzle.....	"	23.50
Fig. 802.	½ pint,	3 ¾ inch	diameter,	9 inch	nozzle.....	"	24.00
Fig. 802½.	1 pint,	4 ¼ inch	diameter,	3 inch	nozzle.....	"	24.75
Fig. 803.	1 pint,	4 ¼ inch	diameter,	5 inch	nozzle.....	"	25.25
Fig. 804.	1 pint,	4 ¼ inch	diameter,	9 inch	nozzle.....	"	25.75

PERFECTION OILERS

HAND OILERS WITH VALVES

Number	25	27	29	31
Capacity quarts	¼	½	1	2
Price, tin per doz.	\$ 8.00	\$ 9.00	\$12.00	\$18.00
Price, brass per doz.	12.00	13.50	18.00	25.00
Price, nickeled per doz.	14.50	17.00	22.50	30.00

Tin only carried in stock. Other styles to order



Fig. 476F



**THE
"CANNON
OILER"**

**FORCES
THE OIL
ANYWHERE**

Showing Method of Application

CANNON OILERS

The Cannon Oilier has a complete force pump attachment without any packing nuts. Both the valves are separate from the plunger, which is packed with the best leather, which, working in oil, will last a long time and can be easily replaced if it ever wears out.

This oilier fills a long-felt want for an oil can in which the oil is entirely controlled by the operator in whatever position the can may be held. In this can is combined speed, convenience and economy. For locomotives, traction engines, automobiles, mills, machine shops, and any machinery that needs lubrication the Cannon Oilier will be found indispensable.

No.	Pints Capacity	Diameter inches	Extreme Height inches	Length of Spout inches	Kind of Material	Price each	Price per dozen
0	1	3 ½	9 ¼	6	Tin	\$0.85	\$10.00
1	1	3	12 ½	8	Tin	.85	10.00
2	1 ½	3 ½	17 ¼	12	Tin	.95	11.00
3	2	4	26	20	Tin	1.10	13.00
0	1	3 ½	9 ¼	6	Brass	1.35	16.00
1	1	3	12 ½	8	Brass	1.35	16.00
2	1 ½	3 ½	17 ¼	12	Brass	1.50	18.00
3	2	4	26	20	Brass	1.75	21.00



Fig. 476D

EXTRA SPOUTS, RAILROAD OILERS



Fig. 475A.
12 inch



No. 475B.
14 inch



Fig. 475C.
9 inches.



Fig. 475D.
5 inch



No. 475E.
3 inch

Copperized and Polished Steel

Fig. 475A.	12 in.	With Coupling for 10, 10 1/2, 11, 17, 17 1/2, 18 oilers.....	per dozen	\$5.75
Fig. 475A.	18 in.	With Coupling for 10, 10 1/2, 11, 17, 17 1/2, 18 oilers.....	per dozen	7.00
Fig. 475B.	10 in.	Extra Large Opening for 100, 101, 111 oilers.....	per dozen	7.00
Fig. 475B.	12 in.	Extra large Opening for 100, 101, 111 oilers.....	per dozen	8.00
Fig. 475B.	14 in.	Extra Large Opening for 100, 101, 111 oilers.....	per dozen	9.00
Fig. 475B.	14 in.	Extra Large Opening for 18A oilers	per dozen	10.00

EXTRA SPOUTS FOR SPRING BOTTOM OILERS

Copperized, Brass and Polished Steel

Figs. 475C-475D-475E

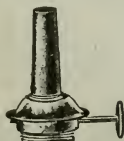
When ordering extra Spouts state whether Breech Lock or Screw Style is wanted

	C. Plated Steel per dozen	Polished Steel per dozen		C. Plated Steel per dozen	Polished Steel per dozen
3 inch Screw Style	\$2.75	\$2.75	3 inch Breech Lock Style..	\$2.75	\$2.75
5 inch Screw Style	3.25	3.25	5 inch Breech Lock Style..	3.25	3.25
9 inch Screw Style	4.25	4.25	9 inch Breech Lock Style..	4.25	4.25

TORCH BURNERS



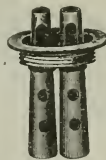
No. A.



No. B.



No. C.



No. D.

All Hand Lamps and Torches illustrated in this book can be furnished with any of the following burners. When no special burner is mentioned, No. A will be shipped. Burners B, C and D are interchangeable.

PRICES

No. A. Single tube	Per doz. \$0.75	No. C. Flat with ratchet.....	Per doz. \$1.00
No. B. Single tube with ratchet	Per doz. 1.05	No. D. Double tube	Per doz. .65

TORCHES AND LAMPS

Please order by number to avoid mistakes



Fig. 26



Fig. 27-28



Fig. 22-24



Fig. 20-21

Fig. 26-27-28 INSPECTORS' AND LOCOMOTIVE TORCHES

Durable, Non-Explosive

These Torches are made of extra heavy steel, making them the strongest and safest Torches for railroad use with kerosene.

Heavily copper plated inside and out.

		Per doz.
No. 26.	Made of drawn seamless tube, with heavy cast base. 1 pint, 2 in. diameter, 15 in. high.	\$12.00
No. 27.	1½ pint, 4¾ in. diameter, 4½ in. high, brass cap and tube.	12.00
No. 28.	1 quart, 4 oz., 5¼ in. diameter, 4½ in. high, brass cap and tube.	15.00

Fig. 20-21 COPPER PLATED STEEL LAMPS

		per doz.	\$
No. 20.	5 oz., 3¾ in. diameter.	6.00	
No. 20½.	½ pint, 3¾ in. diameter.	9.00	
No. 21.	1½ pint, 4¾ in. diameter.	12.00	

Fig. 22-24 COPPER PLATED SEAMLESS STEEL LAMPS

Durable, Non-Explosive

Made with seamless drawn bodies and will therefore never leak. They are perfectly safe for burning kerosene; can be used also for lard oil.

The collars in these lamps are adapted for either the round torch wick or the flat wick for use with a chimney. Above we show this style lamp with torch wick.

These Lamps are always sent with round torch burners. The chimney burners may be had in any lamp store.

Heavily copper plated inside.

		per doz.	\$
No. 22.	1 pint, 3¾ in. diameter.	9.00	
No. 23.	1½ pint, 4 in. diameter.	12.00	
No. 24.	1 quart, 4 oz., 4¾ in. diameter.	15.00	

TORCHES AND LAMPS

Brazen Steel.



Fig. 132



Fig. 122



Fig. 80

Fig. 132 EVERLASTING BRAZED STEEL HAND LAMP

Made to Withstand Roughest Usage. Convenient for the Lathe and Planer

		per doz.	\$
No. 130.	½-pint Steel Hand Lamp, any style burner.	6.00	
No. 131.	¾-pint Steel Hand Lamp, any style burner.	6.50	
No. 132.	1-pint Steel Hand Lamp, any style burner.	7.00	

Fig. 122 STEEL BRAZED BOILER INSPECTOR'S TORCH

NOTE.—Burner furnished as shown or with spout as shown by dotted line. Any modification of design desired.

No. 122.	Body 5 inches long, 1½ inches high, 2¾ inches wide	per doz.	\$9.00
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Fig. 80 "EVERLASTING" BRAZED STEEL PYRAMID TORCHES

For Foundries, Machine Shops, Rolling Mills, Blast Furnaces and Mines

Made from Heavy Steel. A Stout Durable Torch. No Leaks

		per doz.	\$
No. 80.	½-pint, 1-burner	7.00	
No. 81.	1-pint, 1-burner	9.00	
No. 82.	1-quart, 1-burner	10.00	
No. 83.	1-quart, 2-burner	11.00	

TORCH WICKING

This wicking is nicely braided and will effect a large saving over the cost of loose wicking or the old style candle wicking. Packed three dozen in a box, or can be furnished in 16-lb. rolls and 50-lb. bales.

Advise for what torch or lamp the wicking is intended.

Prices upon application.

PAILS AND DIPPERS



Standard Galvanized

Extra Heavy
GalvanizedExtra Heavy
Banded Galvanized

Cement Pail



Horse Pail



Wood Fibre Pail



Wood Fibre, Fire Only

Wood Fibre, Round
BottomGalvanized, Round
Bottom

Fig. 10



Fig. 12

F. L. Thorpe
Galvanized Fire Pail

LIST PRICES

	10	12	14	16		10	12	14	16
	Qts.	Qts.	Qts.	Qts.		Qts.	Qts.	Qts.	Qts.
Standard galv.....	\$3.00	\$3.25	\$3.50	\$7.50	Wood fibre.....		\$4.25		
Extra hvy. galv.....		6.00	6.50	14.00	“ “ fire only...		4.25		
Extra hvy. banded galv.		6.25	6.75		“ “ round bot...		5.75		
Cement			15.00		Galv. round bottom...		4.50	\$5.25	
Horse pail, soft wood..			3.75		F. L. Thorpe fire bucket.		4.50	6.75	
Horse pail, oak.....			8.00						

Fig. 10—GALVANIZED COVERS

For Galvanized Pails

Dozen

No. 10.	For 10-qt. pail, 11	in diam...	\$2.62
No. 12.	For 12-qt. pail, 11 1/4	in. diam...	2.84
No. 14.	For 14-qt. pail, 12	in. diam...	3.04

Fig. 12—WATER DIPPERS

Tin Bottoms

Dozen

No. 1.	5/8-qt. dipper, 5 1/2 x 3 in....	\$1.00
No. 2.	1 1/4-qt. dipper, 6 1/2 x 3 3/4 in.....	1.50

FOR VARIOUS STYLES OF WELL EQUIPMENT, SEE INDEX

FUNNELS

Fig. 240 GASOLINE AUTO FUNNELS

Designed especially for New Cars with large tank openings

The Fastest Flowing Funnel Made

HEAVILY PLATED COPPER

The spouts and lower part of the bodies have beads to prevent them from becoming air bound.

No. 240. 4 quart, diameter of top, 9 3/4 inches; 12 inches high; diameter outlet, 2 inches.....each \$1.00
No. 280. 8 quart, diameter of top, 12 inches; 13 1/4 inches high; diameter outlet, 2 inches.....each 1.25

Fig. 440 GASOLINE TRUCK FUNNELS

Made of Extra Heavy Steel to Stand Hard Service
GALVANIZED

No. 440. 4 quart, diameter of top, 9 3/4 inches; 11 inches high; diameter outlet, 1 1/4 inches.....each \$1.00
No. 880. 8 quart, diameter of top, 12 inches; 12 1/2 inches high; diameter outlet, 1 1/4 inches.....each 1.25

Made of very heavy steel and galvanized; they will stand any amount of hard service. The spouts are sealed to the body (not soldered) so that they cannot break off.

They are fitted with hoops to hold the chamolis and also have fine brass strainers.



Fig. 240



Fig. 440



Fig. 10



Fig. 120



Fig. 001



Fig. 111

Fig. 10 GASOLINE AUTO FUNNELS

With Fine Brass Strainers and Movable Hoop to Hold Chamolis

HEAVILY COPPER PLATED.

No. 10. 1 quart, diam. of top, 5 inches; 6 3/4 inches high; diam. outlet, 1/2 inch; coppered.....each \$0.60
No. 20. 2 quart, diam. of top, 8 1/2 inches; 9 1/4 inches high; diam. outlet, 3/4 inch; coppered.....each .75
No. 40. 4 quart, diam. of top, 9 3/4 inches; 11 inches high; diam. outlet, 7/8 inch; coppered.....each 1.00
No. 80. 8 quart, diam. of top, 12 inches; 12 1/2 inches high; diam. outlet, 1 inch; coppered.....each 1.25

A VERY IMPORTANT FEATURE

The lower part of the body is beaded or fluted for use in tanks with large openings, so that if the filler opening in the tank is larger than the spout and the lower part of the body of the funnel goes down into the tank opening, the beads form an air space and prevent the funnel from becoming air bound.

The spout being large and fluted they will not become air bound in the ordinary size tank opening and also on account of the large space for holding the chamolis the gasoline can be poured through these funnels very fast.

Fig. 120 SHUT-OFF FUNNEL

A Perfect Gasoline Auto Funnel
Patented

Has a movable hoop for holding the chamolis, a fine brass strainer, side handle for convenience and an automatic indestructible ball valve shut-off as a necessity. Simply lift the funnel from the filling hole in the tank or can and no more gasoline can run through the spout.

Remember that not only when the tank is full that lifting the funnel stops the flow of any more gasoline running through the spout, but another very important feature is that the funnel can be lifted from the tank at any time without waiting for the funnel to empty itself.

HEAVILY COPPER PLATED

No. 120. 2 quart, diam. of top, 8 1/2 inches; 9 1/4 inches high; diam. outlet, 3/4 inch.....each \$1.50
No. 140. 4 quart; diam. of top, 9 3/4 inches; 11 inches high; diam. outlet, 3/4 inch.....each 1.75
No. 180. 8 quart, diam. of top, 12 inches; 12 1/2 inches high; diam. outlet, 1 inch.....each 2.00

Fig. 001 PORTABLE FUNNELS

Oval

With Fine Brass Strainers

HEAVILY COPPER PLATED

Square Top Pattern

EXTRA HEAVY WEIGHT

No. 1. 1 pint, length, 5 1/4 inches; width, 2 1/4 inches; height, 6 1/2 inches; diameter outlet, 1/2 inch.....each \$0.50
No. 001. 1 pint, length, 5 1/4 inches; width, 2 1/4 inches; height, 6 1/2 inches; diameter outlet, 1/2 inch.....each .40
No. 2. 1 quart, length, 7 1/4 inches; width, 3 1/4 inches; height, 8 1/2 inches; diameter outlet, 3/4 inch.....each .60

Fig. 111 PLAIN TIN FUNNELS

Light Weight

Without Slop Hoop

NO STRAINERS

No. 11. Diameter of top, 2 1/2 inches; diameter of spout, 5/16 inch.....dozen \$0.62
No. 11 1/2. 1/2 pint; diameter of top, 3 3/4 inches; diameter of spout, 5/16 inch.....dozen .74
No. 12 1/2. 1 pint; diameter of top, 5 1/4 inches; diameter of spout, 7/8 inch.....dozen 1.26
No. 111. 1 quart; diameter of top, 6 3/4 inches; diameter of spout, 1/2 inch.....dozen 1.50
No. 112. 2 quart; diameter of top, 8 inches; diameter of spout, 1/2 inch.....dozen 2.80
No. 114. 1 gallon; diameter of top, 9 inches; diameter of spout, 1/2 inch.....dozen 3.76
No. 118. 2 gallons; diameter of top, 12 inches; diameter of spout, 1/2 inch.....dozen 5.26

MEASURES AND FUNNELS

GALVANIZED GARAGE MEASURE

The Ideal 5 Gallon Garage Measure

Extra Heavy

Warranted Not to Leak



Fig. 15

The most practical 5 gallon measure made; can be filled from a tank, hose or faucet without spattering and can be carried to auto and lifted up on running board to tank without spilling a drop.

It is made of very heavy steel and heavily galvanized, is tested and warranted not to leak or rust. Opening in end of spout, 1½ inches. Opening in top for filling, 4½ inches.

Galvanized with Blue Stripes

No. 15. 5 gal. capacity, 11½ inch diameter by 17 inches high.....each \$2.00

Galvanized and Painted Red

No. 150. 5 gal., same as No. 15, only painted red.....each \$2.00

NON-EVAPORATING GASOLINE MEASURE

The Perfect Five Gallon Garage Measure



Fig. 25

The pouring lip and filler opening are one. The filler opening has a cover plug which is so arranged that by simply turning it one-half a turn the pouring lip is shut off, so that any gasoline left in the measure can remain in the can safely and without loss from evaporation, thereby being a storage can as well as a measure.

It is made of extra heavy steel and galvanized after it is made.

1½ inches diameter by 18 inches high, over all. 4 inches diameter, filling opening.

Galvanized with Blue Bands

No. 25. 5 gal. capacity.....each \$2.50

Galvanized and Painted Red

No. 250. 5 gal., same as No. 25, only painted red.....each \$2.50



Fig. 56



Fig. 210



Fig. 200



Fig. 040

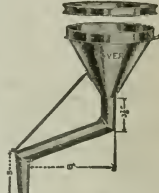


Fig. 4000

Fig. 56 LEVIATHAN GARAGE FUNNEL

Six Gallon Capacity—Extra Heavy

Has seamless brass spout threaded in brass base on bottom thus being removable, facilitating shipment and preventing breakage. Complete with chamolins strainer.

Having had numerous calls for an extra large heavy Funnel of a capacity sufficient to take a five gallon can of gasoline at a single pouring (without having to wait for the contents to run through the chamolins strainer) the above Funnel was designed.

It has a deep, large hoop for the chamolins, which stretches it tight across the bottom, the full diameter of the Funnel giving the maximum straining capacity and insuring a very rapid flow. This chamolins is supported by a wire rack rest to prevent sagging.

Galvanized, with Ball

No.	Capacity gals.	Diam. Ins.	Height Ins.	Length of Spout Ins.	Diam. Spout. Ins.	Each
56	6	14½	10½	5½	1½	\$4.75

Approximate Shipping Weight

1 box contains ¼ doz. No. 56. Weighs 53 lbs.

Fig. 210 COMBINATION MEASURE AND FUNNEL WITH AUTOMATIC SHUT-OFF ATTACHMENT

Simple in Construction, Positive in Action and Everlasting in Quality

Positively Prevents Overflowing the Oil Tank and Spilling Oil Over the Engine and Other Parts

It is not only the most practical measure, combined with a funnel for convenience in pouring, but has in the spout a brass ball valve, (ground oil tight) to shut off the flow of the oil instantly (in a very simple manner) at the convenience of the user.

This measure prevents over-flowing the oil tank, a very useful and necessary feature. Will save its cost in a single season.

Heavily Copper Plated

No.	Cap. quarts	Diam. Bottom, inches	Total Height ins.	Diam. Spout, ins.	Each
21	1	4½	7½	7/16	\$1.00
220	2	5½	9½	½	1.25
240	4	6½	12½	11/16	1.75

Fig. 200 COMBINATION MEASURE AND FUNNEL

In a Class by Itself

Note the pouring lip with a center channel, the funnel on opposite side of pouring lip; also the points of the funnel points slightly upward, so that when measure is set down all oil runs back into measure.

IMPORTANT

These measures are of correct capacity and are marked to comply with the laws of the various States and have been approved by the sealers of various States.

Size	Diam. Bottom	Total Height	Diam. Spout	Polished Tin		Heavy Copper Plated		Copper Plated Brass Strainers	
				No.	Price	No.	Price	No.	Price
½ pt.	2½	4½	5/16	½	\$0.35	2½	\$0.50	20½	\$0.55
1 pt.	3½	5½	¾	1½	.40	5	.58	50	.65
1 qt.	4½	7½	7/16	1	.45	10	.74	100	.80
2 qt.	5½	9½	½	2	.65	20	1.00	200	1.05
4 qt.	6½	12½	11/16	4	.80	40	1.36	400	1.40

Fig. 040 COMBINATION MEASURES AND FUNNELS

Cheaper than the line above, but an unusual value where price rather than quality is the consideration.

Size	Diam. Bottom	Total Height	Diam. Spout	Plain Tin		Copper Plated	
				No.	Price	No.	Price
1 pt.	3½	6	5/16	01½	\$0.24	05	\$0.38
1 qt.	4	8	5/16	01	.34	010	.44
2 qt.	5	10½	½	02	.44	020	.56
4 qt.	6½	12½	¾	04	.60	040	.78

Fig. 4000 TWO-IN-ONE OFFSET GASOLINE FUNNEL

With fine brass strainer, movable hoop to hold chamolins. Spout easily removed, thus forming a regular funnel.

Heavy copper plated.			
No. 4000.	4 quart, diameter top 9½ inches, diameter outlet 1¼ inches, 10 inch offset spout like cut	.....each	\$2.00
No. 8000.	8 quart, diameter top 12 inches, diameter outlet 1½ inches, 10 inch offset spout like cut	.....each	2.25
No. 12000.	8 quart, diameter top 12 inches, diameter outlet 1½ inches, like cut only spout offset (15 inches instead of 10 inches).....each	2.50	

PROTECTION (APPROVED) SAFETY CANS



The Cans that Cannot Explode

These cans are designed for storing and properly handling of all volatile explosive liquids, such as gasoline, naphtha, benzine, turpentine, ammonia, alcohol, kerosene, ether, etc.

The principle governing the non-explosive feature is well known. The can at its opening is fitted with a brass tube, projecting within, through which the liquid flows and the gas, under excessive pressure, can escape.

The tube is provided with openings covered with brass wire cloth of close mesh, which does not hinder the flow of the liquid, but through which fire and flame cannot pass. Should the vapor or contents of the can become ignited, the tube prevents the spread of the flame within, confining it to the opening, thereby making explosion impossible.

The opening of the can is provided with an automatic valve, which makes it airtight, preventing evaporation of the liquid. Should the can be exposed to extreme heat, generating excessive gas pressure, the valve opens, permitting the gas to escape, and closes with reduced pressure.

The safety device of the can is constructed entirely of brass to prevent corrosion and coloring of the liquid and is riveted to the top of the can to secure absolute safety. The body of the can, from the one pint up to the two gallon size, is constructed of 26 gauge leaded plate. For the five and ten gallon cans, 24 gauge leaded plate is used. The best materials are used throughout to secure durability and strength. To fill the can, insert the funnel into the spout.

Bottles are drawn from one piece of metal. Inspected and labeled "Approved by the Underwriters' Laboratories, Inc., Chicago, under the direction of the National Board of Fire Underwriters."

1 pint	each	\$1.25; special funnels.....	per doz.	\$0.50
1 quart	"	1.50; special funnels.....	"	.50
2 quart	"	1.75; special funnels.....	"	.90
1 gallon	"	2.00; special funnels.....	"	.90
2 gallons	"	2.50; special funnels.....	"	.90
3 gallons	"	4.00; special funnels.....	"	.90
5 gallons	"	5.00; special funnels.....	"	1.20
10 gallons	"	7.50; special funnels.....	"	1.20



GASOLINE CANS

Anti-leak. painted red, galvanized, enameled handles. 1½ inch screw tops and large spouts.

OIL CANS

Anti-leak, galvanized. 1½ inch screw tops and large spouts. Enameled handles, galvanized breasts.



Fig. 55

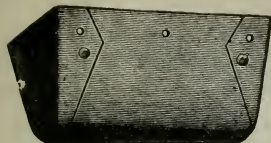
No.	11	22	33	55
Capacity, gals.	1	2	3	5
Size, inches.	6¼ x 9½	8¾ x 11	9¼ x 12¾	10¾ x 16
Crating	1 doz.	½ doz.	¼ doz.	¼ doz.
List price, per doz.	\$4.80	\$7.50	\$9.80	\$12.25

Fig. 5

No.	2	3	5
Capacity, quarts.	2	3	5
Size, inches.	8¾ x 11	9¼ x 12¾	10¾ x 16
Crated	½ doz.	¼ doz.	¼ doz.
List price, per doz.	\$6.60	\$8.75	\$11.00

FOR GASOLINE PUMPS AND STORAGE OUTFITS, SEE INDEX

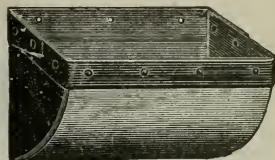
ELEVATOR BUCKETS



"Reliance" Bucket



"Salem" Bucket

The "Empire" Bucket
HEAVY GAUGES

REGULAR SIZES AND GAUGES

Capacity bushels per hour: 250 feet per min.; 12 inches apart	Size of Bucket Width Projection, Ins.	Suitable for Ordinary Mill and Elevator Work Gauge Price	Suitable for Ear Corn, Corn and Cob, and Similar Heavy Substances		Suitable for Ores, Coal, Broken Stone and Extra Heavy Substances			
			Gauge Price	Gauge Price	12 Gauge Price	10 Gauge Price	8 Gauge Price	6 Gauge Price
40	2 1/2 x 2 1/2	24	\$0.10	18	\$0.20	.....	.....	.....
69	3 x 2 1/2	.....	.10	.....	.....	.....	.....	.....
87	3 1/2 x 2 1/2	23	.10	16	.23	.....	.....	.....
102	3 x 3	.....	.23	.....	.....	.....	.....	.....
116	3 1/2 x 3	.....	.10	.....	.31	.....	.....	.....
131	4 x 3	.....	.15	.....	.35	.....	.....	.....
159	4 1/2 x 3	.....	.15	.....	.39	.....	.....	.....
179	4 x 3 1/2	22	.15	14	\$0.41	.....	.....	.....
199	4 1/2 x 3 1/2	.....	.15	.....	.43	.....	.....	.....
229	5 x 3 1/2	.....	.19	.....	.44	.....	.....	.....
251	5 x 4	.....	.19	.....	.48	.....	.....	.....
274	5 1/2 x 4	21	.22	.....	.53	.....	.....	.....
500	6 x 4	.....	.22	.....	.50	.....	.....	.....
670	7 x 4 1/2	20	.30	.....	.56	.....	.....	.....
754	8 x 5	19	.38	.....	.63	.....	.....	.....
973	9 x 5	.....	.40	.....	.75	.....	.....	.....
1220	10 x 5 1/2	.....	.48	.....	.86	.....	.....	.....
1342	10 x 6	18	.55	.....	.91	.....	.....	.....
1464	11 x 6	.....	.63	.....	.98	.....	.....	.....
1708	12 x 6	.....	.70	.....	1.03	.....	.....	.....
1952	14 x 6	.....	.80	.....	1.05	.....	.....	.....
2196	16 x 6	.....	.90	.....	1.10	.....	.....	.....
2440	18 x 6	.....	1.00	.....	1.15	.....	.....	.....
1590	20 x 6	.....	1.10	.....	1.20	.....	.....	.....
1749	10 x 7	.....	.75	.....	1.16	.....	.....	.....
1908	11 x 7	.....	.85	.....	1.23	.....	.....	.....
2226	12 x 7	.....	.90	.....	1.28	.....	.....	.....
2544	14 x 7	.....	.95	.....	1.30	.....	.....	.....
2862	16 x 7	.....	1.33	.....	1.46	.....	.....	.....
3180	18 x 7	.....	1.38	.....	1.40	.....	.....	.....
3184	20 x 7	.....	1.40	.....	1.45	.....	.....	.....
3582	16 x 8	.....	1.40	.....	1.60	.....	.....	.....
3980	18 x 8	.....	1.50	.....	1.65	.....	.....	.....
4378	20 x 8	.....	1.60	.....	1.70	.....	.....	.....
4776	22 x 8	.....	1.70	.....	1.80	.....	.....	.....
	24 x 8	.....	1.80	.....	1.90	.....	.....	.....

"EMPIRE" BUCKETS

As per lists below, the smaller sizes are made of Tin and the larger of smooth, refined Steel: the ends are double seamed to the body by special machinery, which enables us to produce a bucket which for strength and smoothness of finish has no superior.

They are guarded with band iron firmly riveted to the body, making the bucket light but firm; the shape is especially adapted to discharge readily. All Buckets nest in packing, which enables us to secure low freight rates.

EMPIRE TIN MILL BUCKETS

Width Projection, In.	Price	Width Projection, In.	Price
2 x 2	\$0.10	4 x 3 1/2	\$0.13
2 1/2 x 2 1/2	.10	4 1/2 x 3 1/2	.14
3 x 3	.10	5 x 4	.16
3 1/2 x 3	.10	5 1/2 x 4	.17
4 x 3	.12	6 x 4	.18

Odd sizes extra, according to size and cost.

EMPIRE STEEL GRAIN BUCKETS

Width Projection, In.	Number of Bolt Holes	PRICE	
		Plain	Galvanized
5 x 4	2	\$0.16	\$0.27
5 1/2 x 4	2	.17	.28
6 x 4	2	.18	.30
7 x 4 1/2	2	.22	.36
8 x 6	3	.26	.40
9 x 6	3	.28	.45
10 x 6 1/2	3	.35	.56
11 x 6	4	.40	.60
12 x 6	4	.44	.65
14 x 6	4	.50	.70

For Galvanizing and Odd Sizes, Prices Upon Application

EMPIRE STEEL CORN BUCKETS

Made same as Steel Grain Bucket, but of extra heavy material, and are for handling ear corn.

Size of Bucket, Inches		Capac. Cu. In.	Price each
Length	Projec.		
9	6	176	\$0.40
10	6 1/2	240	.50
11	7	288	.56
12	7	320	.59
13	7	352	.62
14	7	384	.65
15	7	416	.70
18	7	448	.76
18	7	480	.82
19	7	512	.87

We also handle Minneapolis V. Rialto, Malleable and extra heavy steel buckets. Prices quoted on application

FOR ELEVATOR BOLTS, SEE INDEX

CONVEYING MACHINERY



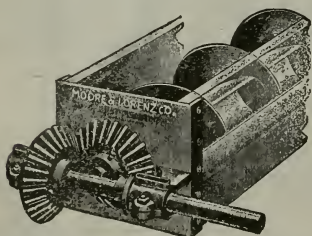
SPIRAL STEEL CONVEYOR

Our Sectional Flight Conveyor is interchangeable with those of all other manufacture. The prices below include the necessary curved iron lining, one coupling with bolts and one hanger with each standard length, except when pieces of Conveyor shorter than standard lengths are ordered, when no fittings will be furnished unless specified and then an extra charge will be made.

In ordering Conveyor always be sure to specify whether RIGHT or LEFT-HAND is required.

Diameter Ins.	Per Foot Black Galv.	Gauge of Flight	Standard Length Feet	Inside Diameter Pipe, Ins.	Revol- utions Per Min.	Capacity Per Hr. Bu.
4	\$1.40	\$1.90	18	8	1	220
6	2.00	2.70	16	10	1 1/2	300
8	2.50	3.50	14	10	1 1/2	180
9	2.50	3.50	14	10	1 1/2	175
9	3.25	4.55	14	10	2	175
10	3.00	4.20	12	10	1 1/2	160
12	3.50	5.00	12	12	2	150
12	4.50	6.25	12	12	2 1/2	150
14	5.00	7.00	10	12	3	140
16	6.25	8.75	10	12	3	130
18	7.50	10.50	10	12	3	120

COUNTER BOX ENDS FOR CONVEYOR



This device is designed to provide a cast iron end box and to furnish bearings necessary for the mitre gear counter shaft all self-contained. This is more economical than using independent bearings.

The gears can be changed from one side to the other, so the motion of the conveyor can be reversed.

Diameter Conveyor Inches	Diameter Driving End Inches	Diameter Countershaft Inches	Price
4	1	1	\$ 9.00
6	1 1/2	1 1/2	12.00
8	1 1/2	1 1/2	16.00
9	1 1/2	1 1/2	16.00
9	2	2	22.00
10	1 1/2	1 1/2	24.00
10	2	2	28.00
12	2	2	33.00
12	2 1/2	2 1/2	40.00
12	3	3	45.00
14	2	2	45.00
14	2 1/2	2 1/2	50.00
16	2 1/2	2 1/2	65.00
16	3	3	70.00
18	3	3	85.00

CAST IRON ENDS FOR CONVEYOR BOXES



These ends take the place of a hanger or bearing. Makes a more rigid bearing for driving ends than a hanger or outside pillow block, and costs less, when labor and material for foundation for outside bearing is considered. The bearing is babbitted and furnished with oil tube.

Size of Conveyor Inches	A Size of Drive End Inches	DIMENSIONS—INCHES						Price
		B	C	E	F	G	H	
4	1	5	3	1 1/2	3 3/4	2 1/4	5 1/2	\$ 2.00
6	1 1/2	7	4	1 1/2	4 1/2	3 1/4	7 3/4	3.00
8	1 1/2	9	4 1/2	1 1/2	5 1/2	4 3/4	10	4.25
9	1 1/2	10	4 1/2	2	6 1/4	4 3/4	11	4.50
9	2	10	6	2	6 1/4	4 3/4	11	5.50
10	1 1/2	11	4 1/2	2	6 3/4	5 3/4	12 1/2	5.00
10	2	11	4 1/2	2	6 3/4	5 3/4	12 1/2	6.00
12	2 1/2	13	6 1/2	2	9	6 1/4	15 1/4	8.00
12	2 1/2	13	4 1/2	2	9	6 1/4	15 1/4	9.00
12	3	13	4 1/2	2	9	6 1/4	15 1/4	10.00
14	2	15	4 1/2	2 3/8	9 3/4	7 1/2	17 1/2	11.00
14	2 1/2	15	4 1/2	2 3/8	9 3/4	7 1/2	17 1/2	11.50
16	2 1/2	17	5	2 3/4	10 3/4	8 3/4	19 1/2	13.00
16	3	17	5	2 3/4	10 3/4	8 3/4	19 1/2	14.00
18	3	19	5	2 1/2	11 1/2	9 3/4	21 1/4	17.00

CAST IRON DISCHARGE END BOX



When it is desired to discharge material through end of conveyor box, the use of end casting shown is recommended. It adds more rigidity to conveyor than an ordinary hanger. The bearing is babbitted and provided with oil tube.

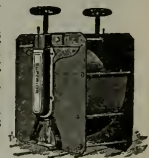
This style is used for both wood and steel boxes.

Size of Conveyor Inches	Size of Shaft Inches	Price	Size of Conveyor Inches	Size of Shaft Inches	Price
4	1	\$1.75	12	2	\$ 7.00
6	1 1/2	2.75	12	2 1/2	8.00
8	1 1/2	3.80	12	3	9.00
9	1 1/2	4.00	14	2 1/2	10.00
9	2	4.50	16	3	11.50
10	1 1/2	5.00	16	3	12.50
10	2	5.50	18	3	15.00

SUPERIOR WROUGHT IRON BOOT

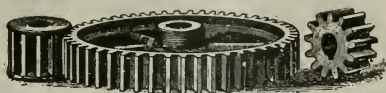
These boots are made of heavy sheet iron sides and cast iron frames, and have extra supports or feet that hold the weight of the elevator legs. An essential feature that is found in no other boot. It has side tighteners, a shield to protect bearings from dust, also oil tube for oiling. It is provided with clean-out doors, either on side or end, as desired. The pulleys are well balanced and all bearings babbitted.

In ordering, give length and projection of buckets. Made with either pulleys or sprocket wheels.



Bucket	Belt	Pulley	Price	Bucket	Belt	Pulley	Price
4 1/2	5 1/2	10x 6	\$20.00	9	10	16x11	\$30.00
5	5	10x 6	20.00	10	11	16x12	33.00
6	7	12x 8	21.00	11	12	16x13	36.00
7	8	14x 9	23.00	12	13	18x14	40.00
8	9	14x10	26.00	14	15	18x16	44.00

SPUR GEARING



The following prices cover Gears bored and key-seated or set screwed:

No. of Pattern	No. of Teeth	Diameter	Face	Pitch in.	Each	No. of Pattern	No. of Teeth	Diameter	Face	Pitch in.	Each
139	16	2.55	1 1/4	3/2	\$1.85	148	100	31.83	2 1/2	1	\$21.00
161	18	2.88	1 1/4	3/2	2.05	127	14	5.05	3	1 1/8	5.25
135	12	2.39	1 1/2	5/8	1.65	214	29	10.38	3	1 1/8	9.00
153	15	2.98	1 1/2	5/8	1.95	225	12	4.77	2	1 1/4	2.40
141	20	3.98	1 1/2	5/8	2.45	122	12	4.77	3 1/4	1 1/4	4.70
198	24	4.77	1 1/2	5/8	2.85	160	13	5.17	3 1/4	1 1/4	5.05
111	45	8.95	1 1/2	5/8	4.95	142	14	5.57	3 1/4	1 1/4	5.40
219	65	12.93	1 1/2	5/8	6.95	113	15	5.97	3 1/4	1 1/4	5.75
18	13	3.10	3	3/4	2.50	136	16	6.37	3 1/4	1 1/4	6.10
209	13	3.10	1 3/4	3/4	1.95	204	17	6.76	3 1/4	1 1/4	6.45
108	14	3.34	1 3/4	3/4	2.10	106	20	7.96	3 1/4	1 1/4	7.50
154	24	5.73	1 3/4	3/4	3.60	10	21	8.35	3 1/4	1 1/4	7.85
155	25	5.97	1 3/4	3/4	3.75	239	27	10.74	3 1/4	1 1/4	9.95
152	39	9.31	1 3/4	3/4	5.85	118	30	11.94	3 1/4	1 1/4	11.00
19	40	9.55	1 3/4	3/4	6.00	121	40	15.95	3 1/4	1 1/4	14.50
156	46	10.98	1 3/4	3/4	6.90	105	60	23.87	3 1/4	1 1/4	21.50
134	60	14.33	1 3/4	3/4	9.00	194	75	29.84	3 1/4	1 1/4	26.75
224	11	3.06	2 1/4	7/8	2.15	112	80	31.83	3 1/4	1 1/4	28.50
123	13	3.62	2 1/4	7/8	2.45	133	90	35.81	3 1/4	1 1/4	32.00
157	14	3.90	2 1/4	7/8	2.60	202	14	6.13	3 1/2	1 3/8	8.70
143	15	4.18	2 1/4	7/8	2.75	203	98	42.90	3 1/2	1 3/8	42.30
192	16	4.46	2 1/4	7/8	2.90	162	10	4.77	4	1 1/2	6.00
145	18	5.01	2 1/4	7/8	3.20	163	12	5.73	4	1 1/2	7.10
11	20	5.57	2 1/4	7/8	3.50	126	13	6.21	4	1 1/2	7.65
125	22	6.13	2 1/4	7/8	3.80	138	14	6.68	4	1 1/2	8.20
181	30	8.36	2 1/4	7/8	5.00	101	15	7.16	4	1 1/2	8.75
196	31	8.63	2 1/4	7/8	5.15	117	16	7.64	4	1 1/2	9.30
197	33	9.19	2 1/4	7/8	5.45	102	18	8.59	4	1 1/2	10.40
124	40	11.14	2 1/4	7/8	6.50	164	20	9.55	4	1 1/2	11.50
12	46	12.81	2 1/4	7/8	7.40	165	24	11.46	4	1 1/2	13.70
146	50	13.93	2 1/4	7/8	8.00	216	26	12.44	4	1 1/2	14.80
13	75	20.89	2 1/4	7/8	11.75	237	28	13.37	4	1 1/2	15.90
220	78	21.72	2 1/4	7/8	12.50	166	29	13.85	4	1 1/2	16.45
158	94	26.18	2 1/4	7/8	14.60	104	36	17.19	4	1 1/2	17.10
190	102	28.41	2 1/4	7/8	15.80	167	45	21.49	4	1 1/2	25.25
132	114	31.75	2 1/4	7/8	17.60	116	46	21.96	4	1 1/2	25.80
206	10	3.18	2 1/2	1	3.00	103	50	23.87	4	1 1/2	28.00
226	11	3.50	2 1/2	1	3.20	215	53	25.30	4	1 1/2	29.65
109	12	3.82	2 1/2	1	3.40	217	56	26.74	4	1 1/2	31.30
144	13	4.13	2 1/2	1	3.60	130	60	28.65	4	1 1/2	33.50
151	14	4.46	2 1/2	1	3.80	131	72	34.38	4	1 1/2	40.10
16	15	4.77	2 1/2	1	4.00	128	83	39.63	4	1 1/2	46.15
129	16	5.09	2 1/2	1	4.20	210	96	45.88	4	1 1/2	53.30
107	18	5.73	2 1/2	1	4.60	199	111	53.00	4	1 1/2	61.55
119	20	6.37	2 1/2	1	5.00	168	12	6.68	5	1 3/4	9.60
140	21	6.68	2 1/2	1	5.20	169	13	7.24	5	1 3/4	10.40
14	25	7.96	2 1/2	1	6.00	149	14	7.80	5	1 3/4	11.20
230	26	8.28	2 1/2	1	6.20	170	15	8.36	5	1 3/4	12.00
207	30	9.55	2 1/2	1	7.00	171	16	8.91	5	1 3/4	12.80
110	36	11.46	2 1/2	1	8.20	172	18	10.03	5	1 3/4	14.40
137	37	11.78	2 1/2	1	8.40	173	24	13.37	5	1 3/4	19.20
15	50	15.92	2 1/2	1	11.00	174	36	20.05	5	1 3/4	28.80
120	63	20.05	2 1/2	1	13.60	205	40	22.28	5	1 3/4	32.00
159	72	22.92	2 1/2	1	15.40	175	52	28.97	5	1 3/4	41.60
17	75	23.87	2 1/2	1	16.00	150	86	47.91	5	1 3/4	68.80
147	88	28.01	2 1/2	1	18.60	...	...	...	...	...	...

CONVEYING MACHINERY

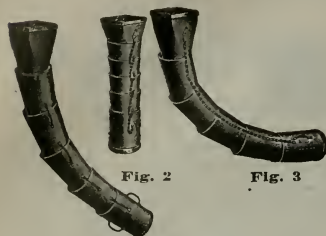


Fig. 2

Fig. 3

Fig. 1

FLEXIBLE GRAIN SPOUTS FOR TRIMMING CARS

These spouts are used to load cars without shoveling, and will work where there is little fall from bin. No. 1 has swivel joint, Nos. 2 and 3 have chain connections. Will turn any angle. No. 1 spout sent unless otherwise ordered.

Each Section adds $8\frac{1}{2}$ inches to the length of the Spout

Special sizes made to order, any size length and any size hopper. In ordering, give size of wooden spout to which you wish the spout fitted.

Diameter inches	Length feet	Hopper, Size of inches	Gauge of Steel			
			No. 18	No. 16	No. 14	No. 12
6	5	10x10	\$ 8.50	\$10.00	\$12.00	\$17.00
8	6	12x12	10.50	12.00	14.00	21.00
10	6	14x14	12.00	15.00	18.00	23.00
12	8	16x16	18.50	20.00	25.00	30.00

Extra Sections

Diameter inches	Length inches	Gauge of Steel			
		No. 18	No. 16	No. 14	No. 12
6	$8\frac{1}{2}$	\$0.70	\$1.00	\$1.20	\$1.35
8	$8\frac{1}{2}$	.85	1.15	1.35	1.50
10	$8\frac{1}{2}$	1.00	1.30	1.50	1.75
12	$8\frac{1}{2}$	1.25	1.50	1.70	2.00

BUFFALO OR WAREHOUSE BUCKETS



These Buckets are made of cold rolled steel, and reinforced with $1\frac{1}{2}$ -inch No. 12 steel bands. We furnish these buckets with either malleable "I" brace or wrought iron "Z" brace as desired. Buckets 14 inches and smaller furnished with one brace, and buckets 16 inches and larger furnished with two braces, when desired, at advanced prices.

PRICE LIST

Width on Belts, inches	Pro- jection inches	Depth, inches	No. 26 Steel, with Malleable "I" Brace	No. 26 Steel with "Z" Brace	No. 24 Steel with Malleable "I" Brace	No. 24 Steel with "Z" Brace
16	x 6	6	\$0.60	\$0.54	\$0.66	\$0.62
18	x 6	6	.66	.62	.78	.74
20	x 6	6	.72	.68	.86	.80
12	x 7	7	...	...	.60	...
14	x 7	7	...	...	.68	...
16	x 7	7	...	...	.80	.76
18	x 7	7	...	...	.88	.84
20	x 7	7	...	...	.94	.90
12	x 7	$7\frac{1}{2}$	...	...	.64	...
14	x 7	$7\frac{1}{2}$	...	...	.72	...
16	x 7	$7\frac{1}{2}$	...	...	.86	.82
18	x 7	$7\frac{1}{2}$	...	...	.94	.90
20	x 7	$7\frac{1}{2}$	...	...	1.00	.96
14	x $7\frac{1}{2}$	$7\frac{1}{2}$	...	...	.78	...
16	x $7\frac{1}{2}$	$7\frac{1}{2}$	...	...	.92	.88
18	x $7\frac{1}{2}$	$7\frac{1}{2}$	...	...	1.00	.96
20	x $7\frac{1}{2}$	$7\frac{1}{2}$	...	...	1.10	1.06
14	x $7\frac{1}{2}$	8	...	...	.82	...
16	x $7\frac{1}{2}$	8	...	...	.96	.92
18	x $7\frac{1}{2}$	8	...	...	1.04	1.00
20	x $7\frac{1}{2}$	8	...	...	1.16	1.12
14	x 8	8	...	...	.88	...
16	x 8	8	...	...	1.04	1.00
18	x 8	8	...	...	1.12	1.08
20	x 8	8	...	...	1.20	1.16

FOR ELEVATOR BOLTS AND WASHERS, SEE INDEX

GRAIN ELEVATOR EQUIPMENT



Fig. 5885. Champion Scoop
THE "CHAMPION" FLOUR
SCOOP



Fig. 5907. Steel Basket
BASKETS
Steel



Fig. 5886. Hercules Grain Scoop

Size inches	Tin	Steel	Galvanized Steel
8	\$0.60	\$0.75	\$0.85
10	.65	.85	1.00
12	.75	1.00	1.10
14	1.00	1.25	1.35

Capacity Bushels	Per Dozen	Bushels Capacity	Per Dozen
$\frac{3}{4}$	\$15.75	3	\$36.00
1	18.00	4	45.00
$1\frac{1}{2}$	22.50	5	54.00
2	27.00	6	63.00

HERCULES GRAIN SCOOP

Bushel Scoop, $12\frac{1}{2}$ inches
wide, 31 in. long. each \$3.00

Half Bushel Scoop, 10
inches wide, $26\frac{1}{2}$ inches
long each 2.50



No. 1



No. 2



No. 3



No. 4

ELEVATOR BOLTS

Per Hundred. List of April 1, 1913

Length, inches	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
$\frac{5}{16}$ in. diam.	\$2.20	\$2.30	\$2.30	\$2.40	\$2.50	\$2.60	\$2.70
$\frac{3}{8}$ in. diam.	3.00	3.00	3.00	3.20	3.40	3.60	3.80
$\frac{7}{16}$ in. diam.	4.00	4.00	4.00	4.30	4.60	4.90	5.20

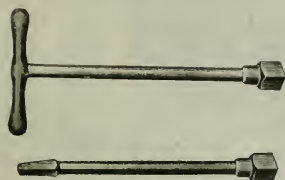


Fig. 414A

ELEVATOR BUCKET WRENCHES

Malleable iron wrenches, for fastening elevator buckets to belts. Wrenches are just the thing for the purpose. Made in T handle style and also for use with brace bit.

When Ordering, State Kind Wanted

Price, each \$0.50

HARD LEATHER WASHERS

For use with elevator bolts on buckets. The standard washer for this work.

Price, per hundred \$0.50



Fig. 414B

"MOSHER" BAG
HOLDERS

This Holder is a great success. It is the only bag holder adapted to all sizes of bags, from a 48 pound flour sack to a 6 bushel gunny bag. One man can take off and put on from 15 to 20 bags a minute. Does not tear the bag. It is

well made; malleable iron jaws wrought iron pipe standards, steel springs and only weighs 20 pounds.

Each \$5.00

WOOD SPLIT PULLEYS

GENERAL CONSTRUCTION

Rim—The rims are built of Southern hardwood, thoroughly seasoned. The lumber is dressed to a uniform thickness, cut in short segments of equal length and width, then each is bedded in glue and securely nailed.

Single arm construction, adopted on sizes 10 inches to 34 inches in diameter.

Arms—The arm stock is selected hardwood. The arms are composed of series of boards dressed exactly to the same thickness as the rim segments, placed edgewise to the strain and built up in alternate layers of the rim, nailed and glued into same, thereby becoming an integral part thereof. This assures great strength.



Double arm construction, adopted on sizes 36 inches to 80 inches in diameter.



Single Cap Block Pulley—This pulley is made in three sections as illustrated by the center view, and the clamping bolts are fixed securely in the half pulley. The two sections are clamped to the shaft as indicated by the view to the left.

STANDARD PRICE LIST

Width of Face

Diam. inches	3	4	5	6	8	10	12	14	16	18	20	22	24
4	2.80	2.90	3.10	3.30	3.70	4.10	4.50	.....	.....	.....	.....	.....	.....
5	2.85	2.95	3.20	3.40	3.85	4.30	4.75	.....	.....	.....	.....	.....	.....
6	2.90	3.00	3.25	3.50	4.00	4.50	5.00	.....	.....	.....	.....	.....	.....
7	2.95	3.05	3.35	3.60	4.15	4.70	5.25	5.80	.....	.....	.....	.....	.....
8	3.00	3.10	3.40	3.70	4.30	4.90	5.50	6.10	.....	.....	.....	.....	.....
9	3.10	3.25	3.60	3.90	4.55	5.20	5.85	6.50	.....	.....	.....	.....	.....
10	3.25	3.40	3.75	4.10	4.80	5.50	6.20	6.90	7.60	.....	.....	.....	.....
11	3.50	3.70	4.10	4.50	5.30	6.10	6.90	7.70	8.50	.....	.....	.....	.....
12	3.75	4.00	4.45	4.90	5.80	6.70	7.60	8.50	9.40	10.30	.....	.....	.....
13	4.30	4.80	5.30	6.30	7.30	8.30	9.30	10.30	11.30	.....	.....	.....
14	4.60	5.15	5.70	6.80	7.90	9.00	10.10	11.20	12.30	13.40	.....	.....
15	4.90	5.50	6.10	7.30	8.50	9.70	10.90	12.10	13.30	14.50	.....	.....
16	5.20	5.85	6.50	7.80	9.10	10.40	11.70	13.00	14.30	15.60	16.90	.....
17	5.50	6.20	6.90	8.30	9.70	11.10	12.50	13.90	15.30	16.70	18.10	.....
18	5.80	6.55	7.30	8.80	10.30	11.80	13.30	14.80	16.30	17.80	19.30	20.80
19	6.10	6.90	7.70	9.30	10.90	12.50	14.10	15.70	17.30	18.90	20.50	22.10
20	6.40	7.25	8.10	9.80	11.50	13.20	14.90	16.60	18.30	20.00	21.70	23.40
22	7.00	7.95	8.90	10.80	12.70	14.60	16.50	18.40	20.30	22.20	24.10	26.00
24	7.70	8.80	9.90	12.10	14.30	16.50	18.70	20.90	23.10	25.30	27.50	29.70
26	8.40	9.65	10.90	13.40	15.90	18.40	20.90	23.40	25.90	28.40	30.90	33.40
28	9.10	10.50	11.90	14.70	17.50	20.30	23.10	25.90	28.70	31.50	34.30	37.10
30	9.80	11.35	12.90	16.00	19.10	22.20	25.30	28.40	31.50	34.60	37.70	40.80
32	10.50	12.20	13.90	17.30	20.70	24.10	27.50	30.90	34.30	37.70	41.10	44.50
34	11.30	13.15	15.00	18.70	22.40	26.10	29.80	33.50	37.20	40.90	44.60	48.30
36	12.10	14.10	16.10	20.10	24.10	28.10	32.10	36.10	40.10	44.10	48.10	52.10
38	17.20	21.50	25.80	30.10	34.40	38.70	43.00	47.30	51.60	55.90
40	18.30	22.90	27.50	32.10	36.70	41.30	45.90	50.50	55.10	59.70
42	19.60	24.60	29.60	34.60	39.60	44.60	49.60	54.60	59.60	64.60
44	20.90	26.30	31.70	37.10	42.50	47.90	53.30	58.70	64.10	69.50
46	22.30	28.10	33.90	39.70	45.50	51.30	57.10	62.90	68.70	74.50
48	23.80	30.00	36.20	42.40	48.60	54.80	61.00	67.20	73.40	79.60
50	25.40	32.00	38.60	45.20	51.80	58.40	65.00	71.60	78.20	84.80
52	27.10	34.10	41.10	48.10	55.10	62.10	69.10	76.10	83.10	90.10
54	28.90	36.30	43.70	51.10	58.50	65.90	73.30	80.70	88.10	95.50
56	30.80	38.60	46.40	54.20	62.00	69.80	77.60	85.40	93.20	101.00
58	32.80	41.00	49.20	57.40	65.60	73.80	82.00	90.20	98.40	106.60
60	34.90	43.50	52.10	60.70	69.30	77.90	86.50	95.10	103.70	112.30
62	37.10	46.10	55.10	64.10	73.10	82.10	91.10	100.10	109.10	118.10
64	39.40	48.40	57.90	67.40	76.90	86.40	95.90	105.40	114.90	124.40
66	41.90	51.80	61.70	71.60	81.50	91.40	101.30	111.20	121.10	131.00
68	44.50	54.90	65.30	75.70	86.10	96.50	106.90	117.30	127.70	138.10
70	47.20	58.10	69.00	79.90	90.80	101.70	112.60	123.50	134.40	145.30
72	50.00	61.40	72.80	84.20	95.60	107.00	118.40	129.80	141.20	152.60
74	71.90	84.80	97.70	110.60	123.50	136.40	149.30	162.20	175.10
76	83.30	97.70	112.10	126.50	140.90	155.30	169.70	184.10	198.50
78	95.80	111.50	127.40	143.30	159.20	175.10	191.00	206.90	222.80
80	109.00	126.50	144.00	161.50	179.00	196.50	214.00	231.50	249.00
90	123.70	143.00	162.30	181.60	200.90	220.20	239.50	258.80	278.10
102	139.30	160.40	181.50	202.60	223.70	244.80	265.90	287.00	308.10
114	155.80	178.70	201.60	224.50	247.40	270.30	293.20	316.10	339.00
120	173.20	197.90	222.60	247.30	272.00	296.70	321.40	346.10	370.80

NON-LISTED SIZES

For a pulley whose diameter is expressed in fractions of an inch, or in inches not listed, use the list of the next larger diameter listed. For a pulley whose face width is expressed in fractions of an inch, or in inches not listed, use the list of the next wider face listed. If face exceeds widest size listed, extend the list at the same rate per inch as that existing between last two sizes listed.

LIST PRICES FOR SPECIALS AND EXTRAS ON WOOD SPLIT PULLEYS

SPECIAL BORES

Our standard bores are as follows:

3 inch diameter.....	1½ inch
4 inch diameter.....	2 inch
5, 6 and 7 inch diameter.....	2½ inch
8 inch and above.....	3½ inch

We will bore pulleys to the limit set forth in the table below without extra charge:

3 inch diam.....	2 inch bore
4 inch diam.....	2½ inch bore
5 inch diam.....	3 inch bore
6 to 41 inch diam.....	3½ inch bore
42 to 47 inch diam.....	4 inch bore
48 to 72 inch diam.....	4½ inch bore
73 to 96 inch diam.....	6 inch bore
97 to 120 inch diam.....	7½ inch bore

When pulleys are bored to fit shaft smaller than standard without bushing, or larger than above limits but less than indicated in table below, add 10 per cent.

Extra Price for Large Bores

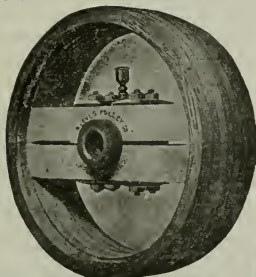
	Add to List					
	15%	20%	25%	35%	50%	65%
Under	3%	4%	5%			
12" Diam.	4" to 4"	4½" to 5"	5½" to 6"			
12" to	4½" to 4"	5" to 4½"	6" to 5½"	7%		
48" Diam.	4½" to 6"	6" to 7½"	7½" to 10"			
49" to	5½" to 6"	6½" to 7½"	7½" to 9½"	9%	12½%	15%
72" Diam.	6" to 7"	7" to 7½"	7½" to 9½"	12"	15"	18"
73" to	7½" to 8"	8" to 10"	10" to 12"	12½%	15½%	18½%
96" Diam.	8" to 10"	10" to 12"	12" to 15"	18"	21"	
97" to	9½" to 10"	10½" to 12½"	12½" to 15"	15½%	18½%	21½%
120" Diam.	10" to 12½"	12½" to 15"	15" to 18"	21"	25"	

For Bores in excess of above limits net prices to be made on application.

TIGHT AND LOOSE PULLEYS

For the tight pulley we use our standard pulley with wood bushing.

In the loose pulley we use an iron bushing. The only extra charge over a regular pulley is for this bushing, which is listed below.



PLAIN SOLID LOOSE PULLEY BUSHINGS

A grease or oil cup should be ordered with every plain bushing. See index.

For split or special bushings, prices upon application.

PRICE LIST

Out-side Diam.	Bore in.	Length						
		3"	4"	5"	6"	8"	10"	12"
2½"	1½"	1.85	2.20	2.50	2.80	3.60	4.40	5.45
	1¾"	2.00	2.35	2.70	3.00	3.85	4.70	5.55
	1½"	2.20	2.50	2.85	3.35	4.15	4.95	5.75
2½"	1½"	2.35	2.70	3.20	3.70	4.70	5.65	6.60
	2"		2.90	3.50	4.15	5.35	6.50	7.65
3"	2½"		3.30	3.95	4.65	6.00	7.45	9.00
4"	2½"				5.65	7.35	9.00	10.75
4½"	3"				7.00	8.70	10.40	12.50
Width of Belt (Face of Pulley)		2"	3"	4"	5"	6"	8"	10"

Intermediate sizes take next higher list.

KEYS



Our Bar Compression Key is made of plate steel, milled on one side to fit the keyway in the shaft and broad enough to extend back between the arms of the pulley far enough so the compression bolts pass through same, precluding the possibility of ever working loose.

Price List for Keyseating Wood Pulleys and for Keys

Size of Shaft		Width of Face of Pulley				
		12 in. or less	13 in. to 16 in.	17 in. to 20 in.	21 in. to 24 in.	
3 in. or less	Keyseating, Price of key,	\$1.25 .50	\$1.75 .60	\$2.35 .70	\$3.00 1.00	
3½ to 3½"	Keyseating, Price of key,	\$1.30 .70	\$1.80 .85	\$2.45 1.00	\$3.10 1.20	
3½ to 4 in.	Keyseating, Price of key,	\$1.50 .87	\$2.00 .97	\$2.70 1.10	\$3.35 1.27	
4½ to 4½"	Keyseating, Price of key,	\$2.00 .93	\$2.50 1.05	\$3.00 1.20	\$3.50 1.35	
4½ to 5 in.	Keyseating, Price of key,	\$2.35 1.05	\$3.00 1.20	\$3.70 1.35	\$4.35 1.50	
5½ to 6 in.	Keyseating, Price of key,	\$3.00 1.20	\$3.75 1.35	\$4.50 1.50	\$5.35 1.75	
6½ to 7 in.	Keyseating, Price of key,	\$3.75 1.45	\$4.50 1.60	\$5.25 1.75	\$6.10 2.00	

STEP CONES



FLANGE PULLEYS



Unless the order specifies otherwise, we furnish our regular pulleys and they are clamped to the shaft separately in the proper position. No extra charge is made for these.

When so specified we furnish split cones with the steps built together; or solid cones, equipped with flanges and set screws. To determine list price of these treat each step as a separate pulley, combine the list and add 50 per cent.

To find the list price of a flange pulley, add to the list price of a regular pulley, 20 per cent for single flange, 25 per cent for double flange, 30 per cent for triple flange.

There is no additional charge for crating.

AMERICAN ALL-WROUGHT STEEL SPLIT PULLEYS



DESIGN

The "American" Steel Split Pulley is designed so as to give maximum strength with minimum weight of material.

It consists of a rim of one-ply steel made exceedingly stiff by interior flanges to which the arms are securely attached. The heavy rolled beads on the outer edges strengthen the face materially at these points. Flat "A" braced arms (edge on) give perfect rigidity and least air resistance. Grooved air escape improves belt contact. Pulleys of small diameters have holes in the face through which a screw-driver may be inserted to tighten the hub clamp bolts, these bolts being made with slotted heads for this purpose.

SOME ADVANTAGES OF THE
"AMERICAN"

Quick and easy installation by means of interchangeable bushings, made to fit different sizes of shafts. No need to strip the shaft to put on an "American."

Best and most efficient belt contact—the grooved face.

"Americans" fan the least air.

"Americans" grip the shaft tightest.

Keyway or set-screw is unnecessary in almost every case.

GUARANTEE

"American" Pulleys are guaranteed to form double belt service under any condition, not requiring a special pulley.

INTERCHANGEABLE BUSHINGS



One Bushing free with each pulley. Additional Bushings at low rates.

For Prices on Steel Split Pulleys see Next Page

PRICE LIST OF AMERICAN STEEL SPLIT PULLEYS FACE IN INCHES

Diam. Inches	2	3	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
6	\$3.15	\$3.30	\$3.45	\$3.75	\$4.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7	3.32	3.38	3.60	3.90	4.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	3.30	2.45	3.75	4.05	4.35	\$4.95	\$5.60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9	3.38	3.60	3.90	4.20	4.50	5.10	5.75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	3.45	3.75	4.05	4.35	4.65	5.25	5.90	\$6.45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11	3.55	3.90	4.20	4.50	4.80	5.40	6.00	6.90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	3.90	4.20	4.60	4.80	5.33	5.78	6.45	7.65	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	4.05	4.35	4.80	5.20	5.62	6.43	7.20	8.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
14	4.30	4.50	5.20	5.65	6.15	7.05	8.03	9.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	4.35	4.65	5.45	5.80	6.55	7.65	8.80	9.75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	4.50	4.95	5.75	6.10	6.90	8.25	9.45	10.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	.....	5.25	6.00	6.50	7.28	8.78	10.05	11.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	.....	5.55	6.38	7.00	7.65	9.30	10.65	12.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19	.....	5.80	6.75	7.50	8.25	10.13	11.25	12.90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	.....	6.00	7.50	8.10	9.00	10.73	12.00	14.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
21	.....	6.25	8.00	8.90	9.60	11.25	12.98	15.60	\$18.00	\$20.55	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
22	.....	6.50	8.55	9.50	10.28	12.00	14.10	16.80	19.50	21.30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
23	.....	7.00	8.70	9.90	10.58	12.60	14.75	18.00	21.00	24.30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
24	.....	7.50	8.90	10.00	10.95	13.20	15.68	19.05	22.65	26.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	.....	8.20	.....	9.20	.....	11.48	13.80	16.40	20.20	24.50	29.25	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	.....	.....	9.55	.....	.....	11.95	14.40	17.10	21.30	26.25	31.20	36.15	41.40	.....	.....	.....	.....	.....	.....	.....
28	.....	.....	10.80	.....	12.90	15.45	18.15	22.90	28.50	34.50	40.35	46.35	.....	.....	.....	.....	.....	.....	.....	.....
30	.....	.....	12.00	.....	14.10	17.25	19.90	24.75	31.50	38.10	45.00	49.50	\$55.50	\$61.50	\$67.50	\$74.25	\$81.67	.....	.....	.....
32	.....	13.20	.....	15.45	19.35	22.50	26.86	34.15	41.65	48.37	54.37	60.37	66.37	72.37	79.60	87.56	\$96.31	.....	.....	.....
34	.....	14.40	.....	17.25	21.75	25.50	30.00	36.75	45.00	51.75	57.45	63.75	69.75	75.00	82.50	90.75	99.82	.....	.....	.....
36	.....	15.90	.....	19.50	24.00	28.65	33.75	39.75	48.60	55.50	61.50	67.50	73.50	79.50	87.45	96.19	105.80	\$116.38	\$128.01	.....
38	.....	.....	19.50	.....	21.75	26.40	31.05	37.15	42.75	51.75	58.87	64.87	70.87	76.87	82.87	91.15	100.26	110.28	121.30	133.43
40	.....	.....	21.00	.....	24.00	28.50	33.75	40.15	46.50	55.15	62.25	69.75	77.25	84.75	92.55	101.80	111.98	123.17	135.48	149.02
42	.....	.....	23.25	.....	26.25	32.25	37.50	43.50	50.25	57.75	65.62	73.12	80.62	88.12	95.62	105.18	115.69	127.25	139.97	153.96
44	.....	.....	.....	.....	29.25	35.62	41.35	47.25	54.00	61.12	69.00	78.00	87.00	96.00	105.00	115.50	127.05	139.75	153.72	169.09
46	.....	.....	.....	.....	33.00	39.00	45.00	50.25	57.75	64.50	72.00	81.00	90.00	99.00	108.00	118.80	130.68	143.74	158.11	173.92
48	.....	.....	.....	.....	36.75	42.00	48.75	54.00	61.50	67.50	75.00	84.00	93.00	102.00	111.00	123.00	135.30	148.83	163.71	180.08
50	.....	.....	.....	.....	40.87	47.25	53.25	58.50	66.00	73.00	81.00	90.00	100.00	110.00	120.00	132.00	145.72	160.79	176.69	193.25
52	.....	.....	.....	.....	46.50	51.00	57.00	63.00	69.00	78.75	90.00	102.00	114.00	126.00	138.00	152.00	167.82	184.67	202.03	222.23
54	.....	.....	.....	.....	50.25	56.25	61.50	67.50	74.25	83.25	96.75	108.75	120.75	132.75	144.75	159.22	175.14	192.65	211.91	233.10
56	.....	.....	.....	.....	54.00	60.75	66.75	72.75	80.25	90.00	104.25	119.25	134.25	149.25	164.25	180.67	198.73	218.60	240.46	264.50
58	.....	.....	.....	.....	60.00	65.25	71.25	78.37	86.62	96.37	110.62	125.62	140.62	155.62	170.62	187.68	206.44	227.08	249.78	274.75
60	.....	.....	.....	.....	63.75	70.00	77.25	84.00	93.00	102.75	117.00	132.00	147.00	162.00	177.00	194.70	214.17	235.58	259.13	285.04

DOUBLE ARM

IN ORDERING PULLEYS, REMEMBER:—

That you should specify diameter, face, bore, and whether Crown or Straight face.
 That if pulleys are ordered without either Crown or Straight face being specified, they will be supplied Crown.
 That for non-shifting belts, Crown faces are the best.
 That for tight and loose pulleys, Crown faces are the best.
 That for shifting belts, Straight faces should be used.
 That pulleys can be bushed down to any size of shaft.

PRICES UP TO 120 INCH DIAMETER ON APPLICATION

IRON PULLEYS

MACHINE MOULDED



Bored, turned and balanced, with set screws or key seats.

SOLID					SOLID					SOLID					SOLID					SOLID				
Diameter Inches	Face Inches	Single Belt	Double Belt	Diameter Inches	Face Inches	Single Belt	Double Belt	Diameter Inches	Face Inches	Single Belt	Double Belt	Diameter Inches	Face Inches	Single Belt	Double Belt	Diameter Inches	Face Inches	Single Belt	Double Belt	Diameter Inches	Face Inches	Single Belt	Double Belt	
6	3	2.20	2.50	11	3	3.30	3.70	15	3	4.35	4.80	19	3	5.45	6.05	22	3	6.35	7.10	26	3	7.40	8.30	
6	4	2.20	2.50	11	4	3.30	3.70	15	4	4.35	4.80	19	4	6.25	7.05	22	4	7.40	8.30	26	4	8.40	9.50	
6	5	2.20	2.50	11	5	3.30	3.70	15	5	5.35	5.85	19	5	7.05	8.10	22	5	8.35	9.50	26	5	9.40	10.75	
6	6	2.20	2.50	11	6	3.30	3.70	15	6	6.10	7.15	19	6	7.90	9.15	22	6	9.35	10.25	26	6	10.55	12.00	
6	7	2.20	2.50	11	7	3.30	3.70	15	7	6.85	8.00	19	7	8.35	10.25	22	7	9.85	11.35	26	7	10.55	12.00	
6	8	2.20	2.50	11	8	3.30	3.70	15	8	7.10	8.25	19	8	8.35	10.25	22	8	10.95	12.40	26	8	11.55	13.30	
6	9	2.20	2.50	11	9	3.30	3.70	15	9	8.60	9.75	19	9	9.85	11.35	22	9	11.35	13.55	26	9	12.65	14.60	
6	10	2.20	2.50	11	10	3.30	3.70	15	10	10.65	12.55	19	10	10.95	12.40	22	10	12.40	14.70	26	10	13.85	15.95	
6	11	2.20	2.50	11	11	3.30	3.70	15	11	11.60	13.50	19	11	11.35	13.55	22	11	13.55	15.90	26	11	15.95	18.70	
6	12	2.20	2.50	11	12	3.30	3.70	15	12	12.55	14.50	19	12	12.40	14.70	22	12	14.70	17.10	26	12	18.70	21.55	
6	13	2.20	2.50	11	13	3.30	3.70	15	13	13.50	15.50	19	13	13.55	15.90	22	13	15.90	18.35	26	13	21.55	23.00	
6	14	2.20	2.50	11	14	3.30	3.70	15	14	14.50	16.50	19	14	13.55	15.90	22	14	17.10	19.60	26	14	23.00	25.00	
6	15	2.20	2.50	11	15	3.30	3.70	15	15	15.50	17.50	19	15	14.70	17.10	22	15	18.35	20.85	26	15	25.00	27.50	
6	16	2.20	2.50	11	16	3.30	3.70	15	16	16.50	18.50	19	16	15.90	18.35	22	16	20.85	23.35	26	16	27.50	30.00	
6	17	2.20	2.50	11	17	3.30	3.70	15	17	17.50	19.50	19	17	17.10	19.60	22	17	23.35	25.85	26	17	30.00	33.00	
6	18	2.20	2.50	11	18	3.30	3.70	15	18	18.50	20.50	19	18	18.35	20.85	22	18	25.85	28.35	26	18	33.00	36.00	
6	19	2.20	2.50	11	19	3.30	3.70	15	19	19.50	21.50	19	19	19.60	22.10	22	19	28.35	30.85	26	19	36.00	39.00	
6	20	2.20	2.50	11	20	3.30	3.70	15	20	20.50	22.50	19	20	20.85	23.35	22	20	30.85	33.35	26	20	39.00	42.00	
6	21	2.20	2.50	11	21	3.30	3.70	15	21	21.50	23.50	19	21	22.10	24.60	22	21	33.35	35.85	26	21	42.00	45.00	
6	22	2.20	2.50	11	22	3.30	3.70	15	22	22.50	24.50	19	22	23.35	25.85	22	22	35.85	38.35	26	22	45.00	48.00	
6	23	2.20	2.50	11	23	3.30	3.70	15	23	23.50	25.50	19	23	24.60	27.10	22	23	38.35	40.85	26	23	48.00	51.00	
6	24	2.20	2.50	11	24	3.30	3.70	15	24	24.50	26.50	19	24	25.85	28.35	22	24	40.85	43.35	26	24	51.00	54.00	
6	25	2.20	2.50	11	25	3.30	3.70	15	25	25.50	27.50	19	25	27.10	29.60	22	25	43.35	45.85	26	25	54.00	57.00	
6	26	2.20	2.50	11	26	3.30	3.70	15	26	26.50	28.50	19	26	28.35	30.85	22	26	45.85	48.35	26	26	57.00	60.00	
6	27	2.20	2.50	11	27	3.30	3.70	15	27	27.50	29.50	19	27	29.60	32.10	22	27	48.35	50.85	26	27	60.00	63.00	
6	28	2.20	2.50	11	28	3.30	3.70	15	28	28.50	30.50	19	28	30.85	33.35	22	28	50.85	53.35	26	28	63.00	66.00	
6	29	2.20	2.50	11	29	3.30	3.70	15	29	29.50	31.50	19	29	32.10	34.60	22	29	53.35	55.85	26	29	66.00	69.00	
6	30	2.20	2.50	11	30	3.30	3.70	15	30	30.50	32.50	19	30	33.35	35.85	22	30	55.85	58.35	26	30	69.00	72.00	
6	31	2.20	2.50	11	31	3.30	3.70	15	31	31.50	33.50	19	31	34.60	37.10	22	31	58.35	60.85	26	31	72.00	75.00	
6	32	2.20	2.50	11	32	3.30	3.70	15	32	32.50	34.50	19	32	35.85	38.35	22	32	60.85	63.35	26	32	75.00	78.00	
6	33	2.20	2.50	11	33	3.30	3.70	15	33	33.50	35.50	19	33	37.10	39.60	22	33	63.35	65.85	26	33	78.00	81.00	
6	34	2.20	2.50	11	34	3.30	3.70	15	34	34.50	36.50	19	34	38.35	40.85	22	34	65.85	68.35	26	34	81.00	84.00	
6	35	2.20	2.50	11	35	3.30	3.70	15	35	35.50	37.50	19	35	39.60	42.10	22	35	68.35	70.85	26	35	84.00	87.00	
6	36	2.20	2.50	11	36	3.30	3.70	15	36	36.50	38.50	19	36	40.85	43.35	22	36	70.85	73.35	26	36	87.00	90.00	
6	37	2.20	2.50	11	37	3.30	3.70	15	37	37.50	39.50	19	37	42.10	44.60	22	37	73.35	75.85	26	37	90.00	93.00	
6	38	2.20	2.50	11	38	3.30	3.70	15	38	38.50	40.50	19	38	43.35	45.85	22	38	75.85	78.35	26	38	93.00	96.00	
6	39	2.20	2.50	11	39	3.30	3.70	15	39	39.50	41.50	19	39	44.60	47.10	22	39	78.35	80.85	26	39	96.00	99.00	
6	40	2.20	2.50	11	40	3.30	3.70	15	40	40.50	42.50	19	40	45.85	48.35	22	40	80.85	83.35	26	40	99.00	102.00	
6	41	2.20	2.50	11	41	3.30	3.70	15	41	41.50	43.50	19	41	47.10	49.60	22	41	83.35	85.85	26	41	102.00	105.00	
6	42	2.20	2.50	11	42	3.30	3.70	15	42	42.50	44.50	19	42	48.35	50.85	22	42	85.85	88.35	26	42	105.00	108.00	
6	43	2.20	2.50	11	43	3.30	3.70	15	43	43.50	45.50	19	43	49.60	52.10	22	43	88.35	90.85	26	43	108.00	111.00	
6	44	2.20	2.50	11	44	3.30	3.70	15	44	44.50	46.50	19	44	50.85	53.35	22	44	90.85	93.35	26	44	111.00	114.00	
6	45	2.20	2.50	11	45	3.30	3.70	15	45	45.50	47.50	19	45	52.10	54.60	22	45	93.35	95.85	26	45	114.00	117.00	
6	46	2.20	2.50	11	46	3.30	3.70	15	46	46.50	48.50	19	46	53.35	55.85	22	46	95.85	98.35	26	46	117.00	120.00	
6	47	2.20	2.50	11	47	3.30	3.70	15	47	47.50	49.50	19	47	54.60	57.10	22	47	98.35	100.85	26	47	120.00	123.00	
6	48	2.20	2.50	11	48	3.30	3.70	15	48	48.50	50.50	19	48	55.85	58.35	22	48	100.85	103.35	26	48	123.00	126.00	
6	49	2.20	2.50	11	49	3.30	3.70	15	49	49.50	51.50	19	49	57.10	59.60	22	49	103.35	105.85	26	49	126.00	129.00	
6	50	2.20	2.50	11	50	3.30	3.70	15	50	50.50	52.50	19	50	58.35	60.85	22	50	105.85	108.35	26	50	129.00	132.00	
6	51	2.20	2.50	11	51	3.30	3.70	15	51	51.50	53.50	19	51	59.60	62.10	22	51	108.35	110.85	26	51	132.00	135.00	
6	52	2.20	2.50	11	52	3.30	3.70	15	52	52.50	54.50	19	52	60.85	63.35	22	52	110.85	113.35	26	52	135.00	138.00	
6	53	2.20	2.50	11	53	3.30	3.70	15	53	53.50	55.50	19	53	62.10	64.60	22	53	113.35	115.85	26	53	138.00	141.00	
6	54	2.20	2.50	11	54	3.30	3.70	15	54	54.50	56.50	19	54	63.35	65.85	22	54	115.85	118.35	26	54	141.00	144.00	
6	55	2.20	2.50	11	55	3.30	3.70	15	55	55.50	57.50	19	55	64.60	67.10	22	55	118.35	120.85	26	55	144.00	147.00	
6	56	2.20	2.50	11	56	3.30	3.70	15	56	56.50	58.50	19	56	65.85	68.35	22	56	120.85	123.35	26	56	147.00	150.00	
6	57	2.20	2.50	11	57	3.30	3.70	15	57	57.50	59.50	19	57	67.10	69.60	22	57	123.35	125.85	26	57	150.00	153.00	
6	58	2.20	2.50	11	58	3.30	3.70	15	58	58.50	60.50	19	58	68.35	70.85	22	58	125.85	128.35	26	58	153.00	156.00	
6	59	2.20	2.50	11	59	3.30	3.70	15	59	59.50	61.50													

IRON PULLEYS

SOLID					SOLID					SOLID					SOLID					SOLID				
Diameter Inches	Face Inches	Single Belt	Double Belt		Diameter Inches	Face Inches	Single Belt	Double Belt		Diameter Inches	Face Inches	Single Belt	Double Belt		Diameter Inches	Face Inches	Single Belt	Double Belt		Diameter Inches	Face Inches	Single Belt	Double Belt	
26	3	\$ 7.75	\$ 8.80		29	3	\$ 9.00	\$10.31		34	3	\$11.35	\$13.10		40	4	\$16.75	\$19.50		46	4	\$20.80	\$24.35	
	4	9.00	10.30			4	10.50	12.01			4	12.95	15.20			5	18.95	22.15			5	23.30	27.50	
	5	10.25	11.80			5	12.00	13.75			5	14.70	17.30			6	21.15	24.80			6	25.95	30.65	
	6	11.50	13.35			6	13.45	15.50			6	16.50	19.45			7	23.40	27.45			7	28.55	33.85	
	7	12.75	14.90			7	14.90	17.30			7	18.40	21.60			8	25.70	30.10			8	31.20	37.05	
	8	14.05	16.50			8	16.35	19.10			8	20.30	23.80			9	28.00	32.80			9	33.85	40.25	
	9	15.35	18.10			9	17.95	20.95			9	22.20	26.05			10	30.30	33.50			10	36.50	43.45	
	10	16.70	19.75			10	19.45	22.80			10	24.15	28.30			11	32.60	38.20			11	39.15	46.70	
	11	18.10	21.40			11	21.05	24.70			11	26.10	30.60			12	34.95	40.95			12	41.60	49.95	
	12	19.50	23.10			12	23.00	26.60			12	28.30	32.90			13	37.70	43.70			13	44.70	53.20	
	13	20.95	24.80			13	24.50	28.55			13	30.00	34.25			14	40.00	46.45			14	47.50	56.50	
	14	22.40	26.55			14	26.00	30.50			14	31.50	36.00			15	42.40	49.25			15	50.00	59.80	
	15	23.90	28.30			15	27.50	32.50			15	33.00	37.60			16	44.85	52.05			16	52.50	63.10	
	16	25.40	30.10			16	29.00	34.50			16	34.50	40.00			17	47.75	54.90			17	55.50	66.45	
	17	26.90	31.90			17	30.50	36.55			17	36.00	42.40			18	50.75	57.75			18	58.50	69.50	
27	3	8.15	9.30		30	3	9.40	10.85		36	3	12.40	14.30		42	4	17.90	21.05		48	4	22.40	26.10	
	4	9.50	10.85			4	10.90	12.65			4	14.20	16.55			5	20.20	23.85			5	25.05	29.40	
	5	10.80	12.45			5	12.45	14.45			5	16.05	18.85			6	22.60	26.65			6	27.75	32.75	
	6	12.10	14.05			6	14.00	16.30			6	18.00	21.15			7	25.00	29.45			7	30.45	36.10	
	7	13.45	15.70			7	15.50	18.15			7	20.05	23.50			8	27.40	32.25			8	33.20	39.45	
	8	14.80	17.35			8	17.15	20.05			8	22.10	25.85			9	29.80	35.10			9	35.95	42.85	
	9	16.20	19.05			9	18.75	21.95			9	24.15	28.25			10	32.20	37.95			10	38.75	46.25	
	10	17.65	20.75			10	20.35	23.90			10	26.20	30.70			11	34.65	40.80			11	41.60	49.65	
	11	19.15	22.55			11	22.00	25.85			11	28.30	33.15			12	37.10	43.70			12	44.50	53.10	
	12	20.65	24.55			12	23.50	27.85			12	30.45	35.65			13	40.00	46.60			13	47.50	56.50	
	13	22.15	26.55			13	25.00	29.85			13	31.50	36.95			14	42.40	49.50			14	50.00	59.80	
	14	23.65	28.55			14	26.50	31.95			14	33.00	38.50			15	44.85	52.45			15	52.50	63.10	
	15	25.15	30.55			15	28.00	33.95			15	34.50	40.25			16	47.75	55.40			16	55.50	66.45	
	16	26.65	32.55			16	29.50	36.00			16	36.00	42.40			17	50.75	58.35			17	58.50	69.50	
	17	28.15	34.55			17	31.00	38.10			17	37.50	44.85			18	53.75	61.35			18	61.50	73.15	
28	3	8.55	9.80		32	3	10.30	11.95		38	4	15.65	18.00		44	4	19.30	22.65		48	4	23.40	27.40	
	4	9.95	11.45			4	11.90	13.90			4	17.70	20.50			5	21.75	25.65			5	26.15	30.55	
	5	11.35	13.10			5	13.55	15.85			5	19.80	23.00			6	24.20	28.65			6	28.85	33.65	
	6	12.75	14.80			6	15.20	17.85			6	21.95	25.55			7	26.70	31.65			7	31.65	36.85	
	7	14.15	16.50			7	16.90	19.85			7	24.10	28.10			8	29.25	34.65			8	34.65	40.75	
	8	15.55	18.25			8	18.60	21.90			8	26.25	30.70			9	31.80	37.70			9	37.70	44.50	
	9	17.00	20.00			9	20.35	23.95			9	28.40	33.30			10	34.30	40.75			10	40.75	48.55	
	10	18.50	21.80			10	22.15	26.05			10	30.60	35.95			11	36.50	43.80			11	43.80	51.85	
	11	20.10	23.60			11	24.00	28.15			11	32.85	38.60			12	39.30	46.85			12	46.85	55.25	
	12	21.70	25.45			12	25.80	30.30			12	35.10	41.30			13	42.40	49.95			13	49.95	58.95	
	13	23.35	27.80			13	27.50	32.50			13	36.60	43.00			14	44.85	53.05			14	53.05	62.40	
	14	25.05	29.20			14	29.20	34.70			14	40.75	47.75			15	47.75	56.15			15	56.15	65.55	
	15	26.80	31.10			15	31.00	36.95			15	42.40	50.00			16	50.75	59.25			16	59.25	68.70	
	16	28.60	33.05			16	32.80	39.20			16	44.85	52.50			17	53.75	62.40			17	62.40	71.80	
	17	30.45	34.90			17	34.60	41.50			17	47.75	55.50			18	56.55	65.55			18	65.55	74.55	
															19	68.70	78.25			19	78.25	87.25		
															20	71.80	81.45			20	81.45	90.45		
															21	75.05	84.75			21	84.75	93.75		
															22	78.25	88.00			22	88.00	97.00		
															23	81.45	91.25			23	91.25	100.25		
															24	84.75	94.55			24	94.55	103.55		

ADDITIONAL PRICE TO BE ADDED TO THE LIST PRICE PER PAIR FOR TIGHT AND LOOSE PULLEYS

Diameter inches	Widths of Face, Inches						
	3 to 4	5 to 6	7 to 8	9 to 10	11 to 12	13 to 14	15 to 16
6 to 9	\$1.30	\$2.00	\$3.00	\$4.50			
10 to 15	1.50	2.30	3.40	5.00	\$7.00		
16 to 20	2.10	2.90	4.00	5.50	7.50		
21 to 30	3.30	4.10	5.20	6.80	9.10	\$12.50	
31 to 42	4.50	5.50	6.90	9.00	12.10	16.50	\$23.00
43 to 60	6.00	7.40	9.30	12.00	15.80	21.00	29.00

ADDITIONAL PRICES FOR BORES LARGER THAN MAXIMUM AS SPECIFIED IN STANDARD LIST

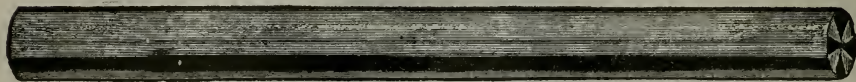
Diameter	
6 to 15 inches	Add 10 per cent for each additional $\frac{1}{4}$ inch or fractional part thereof.
16 to 30 inches	Add 10 per cent for each additional $\frac{1}{4}$ inch or fractional part thereof.
31 to 60 inches	Add 5 per cent for each additional $\frac{1}{4}$ inch or fractional part thereof.

Intermediate widths of Face at next higher price. Intermediate Diameters at extra prices.

Prices on Double Arm and Extra Heavy Pulleys quoted on application.

For Tight and Loose, and Extra Bore, see additional prices above.

POLISHED COLD ROLLED SHAFTING



Made to Whitworth Standard Gauge and Accurately Straightened

Diam. inches	Weight per ft. lbs.	Price per lb.	Diam. inches	Weight per ft. lbs.	Price Per lb.	Diam. inches	Weight per ft. lbs.	Price per lb.	Diam. inches	Weight per ft. lbs.	Price per lb.
6	96.14	8 ½ c	3	24.05		1 ½	6.52		5 ½	1.90	
5 ½	94.14		2 ½	23.06		1 ½	6.01		5 ½	1.77	
5 ½	80.77	7 ¾ c	2 ½	22.09		1 ½	5.60		5 ½	1.68	
5 ½	78.95		2 ½	21.15		1 ½	5.52		5 ½	1.59	
5 ½	67.45	7 c	2 ½	20.21		1 ½	5.26		5 ½	1.50	
4 ½	65.50		2 ½	19.31		1 ½	5.05				
4 ½	60.88	6 ½ c	2 ½	18.41		1 ½	4.61				
4 ½	54.11		2 ½	17.55		1 ½	4.40				
4 ½	52.62		2 ½	16.70	5 c	1 ½	4.17				
4 ½	48.26		2 ½	15.89		1 ½	4.02				
4 ½	46.65	6 c	2 ½	15.07		1 ½	3.86				
4	42.75		2 ½	14.35		1 ½	3.77				
3 ½	41.04		2 ½	13.52		1 ½	3.58				
3 ½	39.40		2 ½	12.80		1 ½	3.38				
3 ½	37.57		2 ½	12.07		1 ½	3.20	5 ½ c			
3 ½	36.40	5 ¾ c	2 ½	11.35		1 ½	3.11				
3 ½	35.20		2	10.69		1 ½	3.02				
3 ½	34.00		1 ½	10.03		1 ½	2.85				
3 ½	32.73		1 ½	9.39		1	2.68				
3 ½	31.58		1 ½	9.10		1	2.52				
3 ½	30.43		1 ½	8.78	5 ½ c	1	2.35				
3 ½	28.22	5 ½ c	1 ½	8.18		1	2.27				
3 ½	27.16		1 ½	7.61		1	2.20				
3 ½	26.09		1 ½	7.06		1	2.05				
						1	1.94				

SQUARES AND HEXAGONS

FLATS
(Prices given are in cents per lb.)

	per lb.	Thickness in inches	1 ½ to ½ in.	1 ½ to 1 in.	1 ½ to 1 in.	1 ½ to 1 in.	Wider than 3 in.
½ in. to ¾ in.	\$0.14	1 ½ in. and ¾ in.	18	18	14	12	10
¾ in. to 1 in.	.12	to 1 ½ in.	16	16	12	10	8
1 in. to 1 ¼ in.	.10	1 ½ in. to 2 in.	14	14	10	8	10
1 ¼ in. to 1 ½ in.	.09	2 in. to 2 ½ in.	10	10	8	8	10
1 ½ in. to 1 ¾ in.	.08 ½	2 ½ in. to 3 in.	10	8	8	8	10
1 ¾ in. to 2 in.	.07 ¾	3 in. to 3 ½ in.	8	8	8	8	10
2 in. to 2 ¼ in.	.07	3 ½ in. to 4 in.	8	8	8	8	10
2 ¼ in. to 2 ½ in.	.08	4 in. to 4 ½ in.	8	8	8	8	10
2 ½ in. to 2 ¾ in.	.08 ½	4 ½ in. to 5 in.	8	8	8	8	10
2 ¾ in. to 3 in.	.09	5 in. to 5 ½ in.	8	8	8	8	10

SEE NEXT PAGE FOR SHAFTING EXTRAS

COLD ROLLED SHAFTING EXTRAS

Shafting—Extras on Rounds, Sizes Smaller than $\frac{3}{4}$ inch. List prices on sizes smaller than $\frac{3}{4}$ inch apply on screw stock quality in random mill lengths. Shafting quality and any grade other than screw stock, or screw stock cut to accurate lengths with lathe or saw cut ends—15c per 100 lbs. net.

Boxing and Burlapping.

Boxing (minimum 50c)	\$0.20 per 100 lbs.
Burlapping (minimum 25c), full length.....	.15 per 100 lbs.
Burlapping of ends only .....	.05 per 100 lbs.

Piston Rod Steel. Uniformity to size and carefully selected surface finish, 50c per 100 lbs. net.

Extras for Accuracy.

For accuracy from exact size to .0015 inch under.....	\$0.25 per 100 lbs. net
For accuracy from exact size to .001 inch under.....	.50 per 100 lbs. net
For accuracy within .0005 inch either way of a specified size or from exact size to .001 inch over.....	1.00 per 100 lbs. net

Quantity Differentials. All specifications for less than 1000 lbs. of a size will be subject to the following extras, the total weight of a size ordered to determine the extra, regardless of length and regardless of the exact quantity actually shipped:

500 to 999 lbs.	\$0.05 per 100 lbs. net
100 to 499 lbs. ....	.10 per 100 lbs. net
Less than 100 lbs. ....	.20 per 100 lbs. net

Extras for Long and Short Lengths.

	Rounds	Squares
3 inch to $5\frac{1}{8}$ inch	\$1.00 per 100 lbs. net	\$1.00 per 100 lbs. net
6 inch to $11\frac{1}{8}$ inch .....	.50 per 100 lbs. net	.50 per 100 lbs. net
12 inch to $23\frac{1}{8}$ inch .....	.25 per 100 lbs. net	.50 per 100 lbs. net
24 inch to $59\frac{1}{8}$ inch .....	.10 per 100 lbs. net	.25 per 100 lbs. net

	Hexagons	Flats
3 inch to $5\frac{1}{8}$ inch	\$1.00 per 100 lbs. net	\$2.00 per 100 lbs. net
6 inch to $11\frac{1}{8}$ inch .....	.50 per 100 lbs. net	1.00 per 100 lbs. net
12 inch to $23\frac{1}{8}$ inch .....	.25 per 100 lbs. net	.50 per 100 lbs. net
24 inch to $59\frac{1}{8}$ inch .....	.10 per 100 lbs. net	.25 per 100 lbs. net

Lengths longer than 24 ft. and less than 30 ft.	\$0.50 per 100 lbs. net
30 ft. and less than 35 ft.	1.00 per 100 lbs. net
35 ft. and less than 40 ft.	1.50 per 100 lbs. net
40 ft. and less than 45 ft.	2.00 per 100 lbs. net
45 ft. and longer.....	2.50 per 100 lbs. net

Extras for long lengths apply on Rounds, Squares, Hexagons and Flats.

PRICE LIST FOR KEY-SEATING SHAFTS

Diameter of Shaft inches	Full Length per foot	For Couplings per End Milled Ends	Middle Splines			
			First Foot or Less Milled Ends	Second Foot and Over per foot	Extra for each Drilled End	Extra for each Squared End
1 — $1\frac{1}{8}$	\$0.16	\$0.24	\$0.50	\$0.16	\$0.20	\$0.30
$1\frac{1}{8}$ — $1\frac{3}{8}$ .....	.20	.30	.60	.20	.30	.40
$1\frac{3}{8}$ — $1\frac{1}{2}$ .....	.24	.40	.70	.24	.40	.50
$1\frac{1}{2}$ — $2\frac{1}{8}$ .....	.30	.50	.80	.30	.50	.60
$2\frac{1}{8}$ — $2\frac{3}{8}$ .....	.40	.60	.90	.40	.60	.70
$2\frac{3}{8}$ — $3\frac{1}{8}$ .....	.50	.80	1.10	.50	.70	.80
$3\frac{1}{8}$ — $3\frac{3}{8}$ .....	.60	1.00	1.30	.60	.80	1.00
$3\frac{3}{8}$ — $4\frac{1}{8}$ .....	.70	1.20	1.50	.70	.90	1.20
$4\frac{1}{8}$ — $4\frac{3}{8}$ .....	.90	1.40	1.70	.90	1.00	1.30
$4\frac{3}{8}$ — $5\frac{1}{8}$	1.20	1.70	2.20	1.20	1.10	1.50
$5\frac{1}{8}$ — $5\frac{3}{8}$	1.50	2.00	2.50	1.50	1.30	1.70
$5\frac{3}{8}$ — 6	2.00	2.50	3.00	2.00	1.50	2.00

Intermediate size, same price.

PATENT "SPIRO" COMPRESSION COUPLING

Double-Sure Grip on Shaft



Fig. 1641

50% more gripping power than any other compression coupling on the market. No keys or key seats needed with this coupling.

Shaft Size	List Price	Shaft Size	List Price
$\frac{3}{4}$	\$3.50	$1\frac{1}{8}$	\$ 8.00
$1\frac{1}{8}$	4.00	$2\frac{3}{16}$	9.00
$1\frac{3}{8}$	4.75	$2\frac{7}{16}$	10.75
$1\frac{5}{8}$	5.00	$2\frac{11}{16}$	13.00
$1\frac{7}{8}$	5.50	$2\frac{1}{2}$	16.00
$1\frac{15}{16}$	6.25		

PLATE COUPLING

With Tight Fitting Bolts and Keys

Shaft Size	List Price	Shaft Size	List Price
$1\frac{3}{16}$	\$ 8.00	$3\frac{7}{16}$	\$ 28.50
$1\frac{7}{16}$	9.00	$3\frac{1}{2}$	33.50
$1\frac{1}{2}$	10.50	$3\frac{1}{2}$	36.00
$1\frac{5}{8}$	11.50	$4\frac{3}{16}$	49.00
$2\frac{3}{16}$	13.00	$4\frac{7}{16}$	63.00
$2\frac{7}{16}$	14.50	$4\frac{1}{2}$	68.00
$2\frac{1}{2}$	17.50	$4\frac{1}{2}$	75.00
$2\frac{1}{2}$	21.50	$5\frac{7}{16}$	88.00
$3\frac{3}{16}$	26.00	$5\frac{1}{2}$	103.00

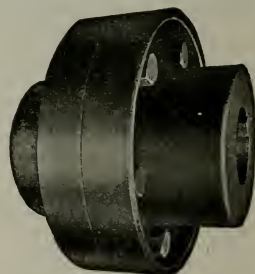
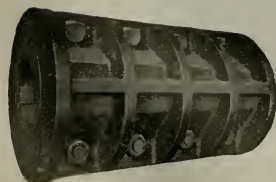


Fig. 1642

CLAMP COUPLING

Fig. 1643
With Keys

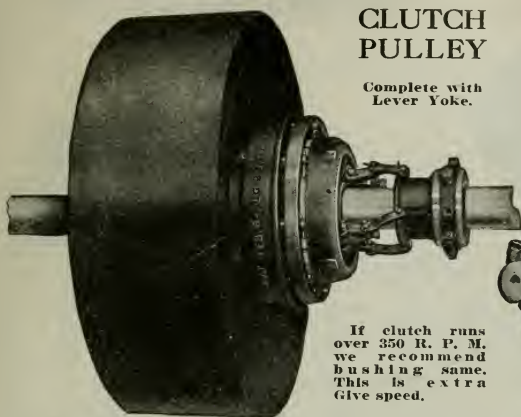
Shaft Size	List Price	Shaft Size	List Price
$1\frac{1}{8}$	\$ 4.50	$3\frac{3}{8}$	\$19.00
$1\frac{3}{8}$	5.00	$3\frac{7}{8}$	21.50
$1\frac{7}{8}$	6.00	$3\frac{1}{2}$	24.50
$1\frac{1}{2}$	7.00	$3\frac{1}{2}$	28.00
$1\frac{1}{2}$	8.50	$4\frac{3}{8}$	33.00
$2\frac{3}{8}$	10.00	$4\frac{7}{8}$	38.00
$2\frac{7}{8}$	11.00	$4\frac{1}{2}$	43.00
$2\frac{1}{2}$	12.50	$4\frac{1}{2}$	48.00
$2\frac{1}{2}$	15.00		

FOR SHAFTING, WOOD AND STEEL PULLEYS, SEE INDEX

THE MASTER FRICTION

CLUTCH PULLEY

Complete with
Lever Yoke.



If clutch runs
over 350 R. P. M.
we recommend
bushing same.
This is extra
Give speed.

This clutch is very powerful owing to its double wedge-shaped friction surfaces that grip like a vise. Size for size it transmits almost twice the power of any other make.

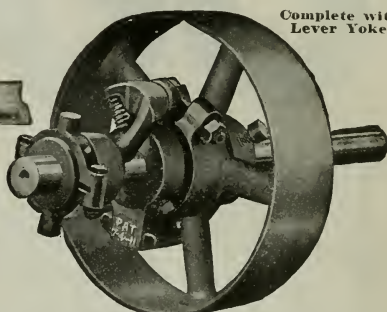
It may be run at high speeds if desired. Some of the sizes running as high as 1200 R. P. M. successfully.

For an all round, high grade, serviceable clutch pulley there is nothing like it on the market.

It has no projecting parts flying around to endanger life and always releases when disengaged.

THE MASTER BAND CLUTCH PULLEY

Complete with
Lever Yoke.



This clutch is extremely simple and easy to adjust and requires very little space on the shaft. It is a good clutch pulley for line shaft and countershaft work.

Size	Price	Size	Price	Size	Price	Size	Price	Size	Price
16	\$54.50	24	\$66.40	32	\$83.60	40	\$101.20	50	\$113.50
7 57.00		7 78.50		7 86.60		7 104.90		8 137.70	
8 58.00		8 80.10		8 98.80		8 123.20		10 161.60	
9 60.10		9 82.60		9 102.20		9 127.30		12 190.60	
10 61.10		10 94.10		10 119.80		10 139.30			
		12 98.70		12 128.30		12 152.50			
		14 119.50		14 148.00		14 180.00			
17	\$55.00			16 156.60		16 189.80		52	\$116.10
8 59.00		5 66.20						8 140.80	
9 60.90		7 67.90		34	\$85.40	42	\$103.30	10 165.10	
10 71.90		7 80.20		7 98.40		8 125.60		12 194.70	
		8 81.90		8 100.90		10 133.10			
18	\$56.40	9 84.60		9 104.50		12 155.80		54	\$134.00
8 59.80		10 96.30		10 122.30		14 183.40		8 133.90	
9 71.70		12 101.30		12 129.20		16 193.50		10 168.70	
10 72.80		14 122.30		14 151.20				12 198.80	
				16 179.10					
20	\$57.80	28	\$67.60			44	\$106.50	56	\$136.70
6 57.80		5 67.60		36	\$87.20	46	\$108.80	8 161.50	
8 61.30		6 79.40		7 100.50		8 129.60		10 191.40	
9 73.40		7 81.90		8 103.20		10 137.80		12 203.60	
10 74.70		8 83.90		9 122.30		12 161.10			
12 88.50		9 96.60		10 125.00		14 189.80		58	\$139.60
		10 98.60		12 132.00		16 193.50		8 164.10	
22	\$60.00	30	\$81.10	46	\$108.80	60	\$142.50	10 195.30	
6 62.00		7 83.80		8 132.20		8 125.20			
8 73.40		8 95.80		10 154.70		12 183.50		8 138.20	
9 75.70		9 98.80		12 172.90		14 193.60		10 199.10	
10 77.20		10 100.90		14 182.50					
12 91.40		12 121.90				48	\$111.10		
		14 128.30				8 134.90			
						10 158.40			
						12 187.00			
						14 197.50			
						16 177.30			
						18 187.00			

No. 2 Clutch Pulleys Single Belt 4 1/2 H. P. Bore to 2 7/16 in.				No. 2 1/2 Clutch Double Belt 6 H. P. Bore to 3 in.				No. 3 Clutch Double Belt 7 1/2 H. P. Bore to 3 1/2 in.			
Size	Price	Size	Price	Size	Price	Size	Price	Size	Price	Size	Price
6	\$19.20	14	\$21.20	10	\$27.70	14	\$37.60	10	\$37.60	14	\$37.60
4	19.50	4	21.80	7	29.00	8	38.50	7	37.60	8	38.50
5	20.30	5	22.00	8	29.70	9	40.30	8	37.20	9	38.80
6	20.70	6	22.70	10	32.20	10	39.80	10	39.80		
7	19.40	15	21.50	12	28.60	18	37.60	12	37.60	18	37.60
4	19.80	4	22.10	6	30.80	7	38.50	6	30.80	7	38.50
5	20.60	5	22.60	8	32.60	8	40.30	8	32.60	8	40.30
6	21.00	6	23.10	10	33.50	10	39.80	10	33.50	10	39.80
8	19.50	16	22.20	14	29.60	20	37.20	14	29.60	20	37.20
4	19.90	4	22.80	7	31.30	7	38.80	7	31.30	7	38.80
5	20.00	5	23.10	8	32.20	8	39.80	8	32.20	8	39.80
6	20.40	6	23.90								
8	22.00										
9	19.80	18	22.80	15	30.20	22	36.00	15	30.20	22	36.00
4	20.20	4	23.50	6	30.20	5	37.60	6	30.20	5	37.60
5	20.30	5	24.00	8	32.80	6	38.70	8	32.80	6	38.70
6	20.70	6	24.90								
8	22.40										
10	20.10	20	23.40	16	28.50	24	36.90	16	28.50	24	36.90
4	20.60	4	24.40	5	29.90	5	38.70	5	29.90	5	38.70
5	20.70	5	25.00	6	30.90	6	39.90	6	30.90	6	39.90
6	21.20										
8	23.00										
12	20.70	22	24.70	18	29.50	26	37.90	18	29.50	26	37.90
3	21.20	4	28.40	4	31.00	5	39.80	4	31.00	5	39.80
5	21.40	5	29.30	6	32.20	6	41.30	6	32.20	6	41.30
6	22.00										
8	23.90										



Simple and
Inexpensive.

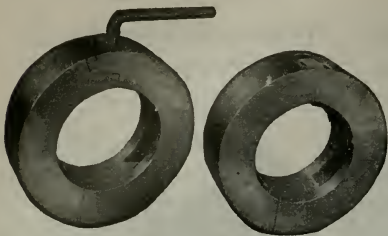
Master Gasoline Engine Clutch Pulleys

Compact and
Efficient.

Di	Fee	H. P.	Price	Di	Fee	H. P.	Price	Di	Fee	H. P.	Price	Di	Fee	H. P.	Price
6	4.6	To 2 1/2	\$11.30	14	4.6	To 6	\$13.00	18	6.3	To 8	\$20.40	22	8.10	To 12	\$26.90
8	4.6	To 6	11.70	16	4.6	To 6	13.70	20	4.6	To 6	15.40	24	6.8	To 8	23.70
10	4.6	To 6	12.10	16	6.8	To 8	19.50	20	6.8	To 8	21.30	24	8.10	To 12	28.20
12	4.6	To 6	12.60	18	4.6	To 6	14.20	22	6.8	To 8	22.60	26	6.8	To 8	24.80

Give Size of Shaft and Key Seat. Add 30% if Clutch is Bolted to Arms and Send Sketch.

SAFETY SPLIT COLLAR

Fig. 1651.
Holscrew TypeFig. 1652.
Standard Type

SAFETY SET COLLARS

Fig. 1653.
Double Flange Solid Set Collar

Shaft Size	List	Shaft Size	List	Shaft Size	List	Shaft Size	List	Shaft Size	List	Shaft Size	List	Shaft Size	List	Shaft Size	List
in.		in.		in.		in.		in.		in.		in.		in.	
$\frac{3}{4}$	\$0.87	$1\frac{1}{8}$	\$2.10	$3\frac{1}{8}$	\$4.05	$4\frac{1}{2}$	\$7.28	1	\$0.65	$2\frac{1}{8}$	\$1.55	$3\frac{3}{8}$	\$2.92	$4\frac{1}{2}$	\$5.30
$\frac{1}{2}$	.93	2	2.17	$3\frac{1}{4}$	4.15	$4\frac{3}{4}$	7.56	$1\frac{1}{8}$	.75	$2\frac{1}{4}$	1.60	$3\frac{1}{2}$	3.00	$4\frac{3}{4}$	5.45
1	.97	$2\frac{1}{2}$	2.32	$3\frac{3}{8}$	4.38	$4\frac{7}{8}$	7.95	$1\frac{1}{4}$	.80	$2\frac{3}{4}$	1.65	$3\frac{1}{4}$	3.08	$4\frac{1}{2}$	5.60
$1\frac{1}{8}$	1.13	$2\frac{3}{4}$	2.40	$3\frac{1}{2}$	4.50	$4\frac{1}{2}$	8.18	$1\frac{3}{8}$	.85	$2\frac{1}{2}$	1.75	$3\frac{1}{8}$	3.14	$4\frac{3}{4}$	5.75
$1\frac{1}{4}$	1.20	$2\frac{7}{8}$	2.57	$3\frac{1}{2}$	4.62	$4\frac{3}{4}$	8.45	$1\frac{1}{2}$	.90	$2\frac{3}{4}$	1.80	$3\frac{1}{2}$	3.22	$4\frac{1}{2}$	5.90
$1\frac{1}{2}$	1.27	$3\frac{1}{8}$	2.63	$3\frac{3}{4}$	4.71	$4\frac{7}{8}$	8.62	$1\frac{3}{4}$	.95	$2\frac{7}{8}$	1.88	$3\frac{1}{4}$	3.30	5	6.06
$1\frac{3}{4}$	1.35	$3\frac{1}{4}$	2.70	$3\frac{3}{8}$	4.83	$4\frac{1}{2}$	8.85	$1\frac{7}{8}$	1.00	$2\frac{7}{8}$	2.03	$3\frac{3}{4}$	3.37	$5\frac{1}{4}$	6.23
$1\frac{7}{8}$	1.43	$3\frac{3}{8}$	2.82	$3\frac{1}{2}$	4.95	5	9.10	$1\frac{1}{2}$	1.05	$2\frac{1}{2}$	2.10	$3\frac{1}{2}$	3.45	$5\frac{3}{4}$	6.67
2	1.50	$3\frac{1}{2}$	3.05	$3\frac{3}{4}$	5.05	$5\frac{1}{8}$	9.35	$1\frac{1}{4}$	1.10	$2\frac{1}{4}$	2.17	$3\frac{3}{8}$	3.52	$5\frac{1}{2}$	7.00
$2\frac{1}{8}$	1.57	$3\frac{3}{4}$	3.15	$3\frac{1}{2}$	5.18	$5\frac{1}{4}$	10.00	$1\frac{3}{8}$	1.15	$2\frac{3}{8}$	2.25	$3\frac{1}{2}$	3.60	$5\frac{3}{4}$	7.20
$2\frac{1}{4}$	1.65	$3\frac{1}{2}$	3.25	$3\frac{3}{8}$	5.28	$5\frac{1}{2}$	10.50	$1\frac{1}{2}$	1.20	$2\frac{1}{2}$	2.32	$3\frac{1}{4}$	3.73	$5\frac{1}{2}$	7.50
$2\frac{1}{2}$	1.72	$3\frac{1}{4}$	3.38	$3\frac{1}{2}$	5.40	$5\frac{3}{4}$	10.80	$1\frac{3}{4}$	1.25	$2\frac{3}{4}$	2.40	$3\frac{3}{4}$	4.15	$5\frac{3}{4}$	8.00
$2\frac{3}{4}$	1.80	$3\frac{3}{8}$	3.48	4	5.60	$5\frac{1}{2}$	11.25	$1\frac{1}{2}$	1.30	3	2.48	$4\frac{1}{8}$	4.28	$5\frac{1}{2}$	8.50
3	1.87	$3\frac{1}{2}$	3.60	4	6.22	$5\frac{1}{4}$	12.00	$1\frac{7}{8}$	1.35	$3\frac{1}{8}$	2.63	$4\frac{1}{4}$	4.70	6	9.00
$3\frac{1}{8}$	1.95	3	3.72	4	6.42	5	13.00	$1\frac{1}{2}$	1.40	$3\frac{1}{4}$	2.70	$4\frac{1}{2}$	4.85		
$3\frac{1}{4}$	2.03	$3\frac{3}{4}$	3.95	$4\frac{1}{8}$	7.05	6	14.00	2	1.45	$3\frac{3}{4}$	2.77	$4\frac{3}{4}$	5.15		

IRON SHEAVES FOR MANILA ROPE TRANSMISSION

For $\frac{3}{4}$, $\frac{7}{8}$ and 1 inch Rope

Diam. inches	Number of Grooves									
	1	2	3	4	5	6	7	8	9	10
12	\$9.70	\$12.90	\$15.12	\$21.84	\$25.56	\$28.98	\$32.40	\$36.24	\$40.50	\$45.84
14	9.66	13.50	17.69	22.66	26.52	30.06	33.60	37.56	41.94	47.40
16	10.38	14.40	20.82	23.82	27.78	31.44	35.10	39.18	43.68	49.26
18	11.76	15.66	21.00	27.12	32.40	37.08	41.40	45.36	50.58	56.40
20	12.72	17.52	26.64	30.66	36.78	42.30	47.46	52.26	58.32	64.98
22	13.20	18.84	27.30	35.61	41.52	47.22	53.70	59.40	66.36	71.82
24	14.82	20.76	29.46	37.56	44.16	50.16	56.82	62.76	69.96	75.66
26	15.90	22.68	31.92	41.16	48.60	55.44	63.36	69.72	77.76	84.30
28	16.56	23.50	32.94	42.36	49.98	57.00	65.10	71.64	79.83	86.60
30	18.24	25.66	34.26	43.86	51.66	58.86	67.24	73.86	82.26	89.16
32	20.88	29.58	38.26	48.24	58.02	64.20	72.54	80.16	89.04	97.92
34	22.62	30.60	39.96	49.62	59.58	65.94	74.46	82.26	91.32	100.38
36	23.04	31.50	41.34	51.48	61.92	68.76	77.76	86.04	95.58	105.12
40	26.52	35.64	46.86	57.48	70.50	85.32	96.24	103.44	111.18	119.40
44	29.16	38.69	49.93	61.20	74.58	89.78	100.86	108.60	116.70	125.28
48	33.72	46.08	54.18	70.98	85.08	99.00	110.11	120.00	128.28	137.28
52	41.70	54.54	68.16	79.68	93.90	107.94	119.28	129.18	137.58	146.70
56	44.10	57.60	71.58	83.46	98.04	112.44	124.14	134.40	143.16	152.64
60	50.10	63.66	76.08	98.10	111.12	128.04	144.48	155.22	172.02	185.82

LARGER SIZES FURNISHED ON APPLICATION.

RIGID, RING OILING PILLOW BLOCKS

BEARINGS BABBITTED AND REAMED



Fig. 1631

Shaft Size	List Price	Shaft Size	List Price	Shaft Size	List Price
$1\frac{1}{8}$	\$3.50	$2\frac{3}{8}$	\$7.00	$3\frac{7}{8}$	\$15.00
$1\frac{3}{8}$	3.75	$2\frac{1}{2}$	8.00	$3\frac{1}{2}$	18.00
$1\frac{7}{8}$	4.65	$2\frac{7}{8}$	9.25	$3\frac{1}{8}$	22.00
$1\frac{1}{2}$	5.25	$2\frac{1}{4}$	10.40		
$1\frac{3}{4}$	6.00	$3\frac{1}{4}$	12.00		

UNIVERSAL RING OILING BRACKET HANGERS

BEARINGS BABBITTED AND REAMED

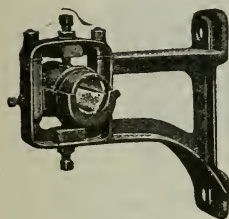


Fig. 1632

Size	Extension	List	Size	Extension	List	Size	Extension	List	Size	Extension	List
$1\frac{1}{8}$	10	\$5.00	$1\frac{1}{2}$	16	\$8.50	$2\frac{3}{8}$	14	\$11.50	$2\frac{1}{2}$	12	\$15.00
"	12	5.50	"	18	9.25	"	16	13.00	"	14	16.50
"	14	6.00	"	20	10.00	"	18	14.50	"	16	18.00
"	16	6.50	$1\frac{3}{8}$	10	7.50	"	20	16.00	"	18	21.00
$1\frac{7}{8}$	10	5.50	"	12	8.00	$2\frac{7}{8}$	10	10.50	"	20	25.00
"	12	6.00	"	14	8.75	"	12	11.25	$2\frac{1}{2}$	10	16.00
"	14	6.50	"	16	9.50	"	14	12.50	"	12	17.00
"	16	7.00	"	18	10.25	"	16	14.00	"	14	18.50
$1\frac{1}{2}$	10	6.50	"	20	11.00	"	18	15.50	"	16	20.00
"	12	7.00	$2\frac{3}{8}$	10	9.50	"	20	17.00	"	18	23.00
"	14	7.75	"	12	10.25	$2\frac{1}{2}$	10	14.00	"	20	27.00

FLAT BOX



Fig. 1633

Bearings Babbitted and Reamed

Shaft Size	List Price	Shaft Size	List Price
$\frac{3}{4}$	\$0.95	$1\frac{1}{2}$	\$2.90
$1\frac{1}{8}$	1.00	$2\frac{3}{8}$	3.70
$1\frac{3}{8}$	1.20	$2\frac{7}{8}$	4.25
$1\frac{7}{8}$	1.60	$2\frac{1}{2}$	5.40
$1\frac{1}{2}$	2.20	$2\frac{1}{4}$	6.00

SOLID SLEEVE COUPLING



Fig. 1634

Couplings Furnished with Either Hollow Set Screws or Recessed Head Set Screws At the Same Price

Shaft Size	List Price	Shaft Size	List Price
$1\frac{1}{8}$ in.	\$3.00	$1\frac{7}{8}$ in.	\$4.00
$1\frac{3}{8}$ in.	3.50	$1\frac{1}{2}$ in.	4.50
$1\frac{7}{8}$ in.	3.75	$1\frac{1}{4}$ in.	5.50

SPLIT POST JOURNAL BEARING

Babbitted and Reamed



Fig. 1621

Shaft Size	List Price	Shaft Size	List Price
$\frac{3}{4}$	\$1.50	$1\frac{3}{8}$	\$2.25
$\frac{7}{8}$	1.55	$1\frac{7}{8}$	2.35
$1\frac{1}{8}$	1.65	$1\frac{1}{2}$	2.50
1	1.75	$1\frac{5}{8}$	2.75
$1\frac{1}{8}$	1.85	$1\frac{3}{4}$	3.00
$1\frac{3}{8}$	2.00	$1\frac{7}{8}$	3.25
$1\frac{1}{4}$	2.10	$1\frac{7}{8}$	3.50
$1\frac{5}{8}$	2.15	$1\frac{1}{2}$	3.75

Especially adapted to conveyor work on account of the angle of the split in the bearing and position of oil cup.

UNIVERSAL BALL AND SOCKET RING OILING POST HANGERS

Bearings Babbitted and Reamed

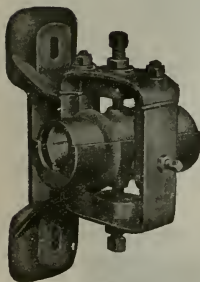
Side adjustment $\frac{1}{2}$ inch. Vertical 1 inch

Fig. 1622

Shaft Size	List Price	Shaft Size	List Price	Shaft Size	List Price
$\frac{1}{8}$	\$3.75	$2\frac{7}{8}$	\$10.25	$3\frac{1}{8}$	\$33.50
$1\frac{1}{8}$	4.75	$2\frac{1}{2}$	13.50	$4\frac{3}{8}$	43.00
$1\frac{1}{4}$	5.25	$2\frac{3}{4}$	15.50	$4\frac{1}{2}$	46.00
$1\frac{3}{8}$	6.00	$3\frac{1}{8}$	20.00	$4\frac{7}{8}$	53.50
$1\frac{1}{2}$	7.00	$3\frac{1}{4}$	22.00	$4\frac{3}{4}$	56.00
$2\frac{1}{8}$	9.25	$3\frac{1}{2}$	31.50		

"RIGID" RING OILING POST BOX

Bearings Babbitted and Reamed



Fig. 1623

Shaft Size	List Price	Shaft Size	List Price
$1\frac{3}{8}$	\$4.00	$2\frac{1}{8}$	\$13.00
$1\frac{7}{8}$	5.00	$2\frac{3}{8}$	15.00
$1\frac{1}{2}$	5.75	$3\frac{1}{8}$	18.50
$1\frac{3}{4}$	6.75	$3\frac{1}{4}$	22.00
$2\frac{1}{8}$	8.50	$3\frac{3}{8}$	31.50
$2\frac{7}{8}$	10.00		

UNIVERSAL WICK OILING HANGER

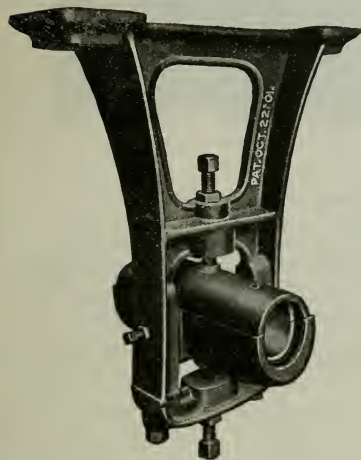


Fig. 1601



Fig. 1602

Bearings Babbitted and Reamed

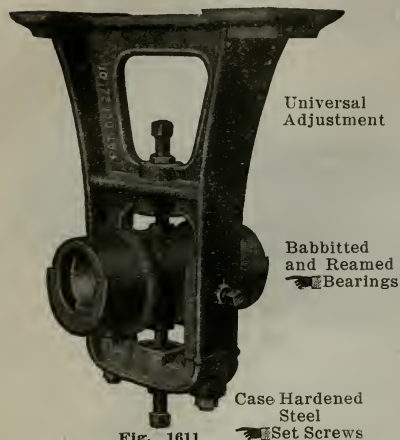
In the Wick Oiling Box illustrated above is presented a very efficient self-oiling bearing.

The wick is of ample proportions to assure thorough lubrication.

PRICE LIST

	Range of Drops in inches										
Shaft Size	4 3/4 - 5 1/4	6-8	8-10	11-13	14-16	18-20	19-21	22-24	26-28	30-32	34-36
1 5/16	\$2.50	\$2.75	\$3.00	\$3.50	\$4.00	....	....	....	....	....	....
1 3/8	3.25	3.75	4 00	4.50	5.00	\$5.75	\$6.25	....	....	....	....
1 7/16	3.50	4.00	4.25	4.75	5.25	6.00	6.50	....	....	....	....
1 1/2	....	5.25	5.50	6.00	6.50	7.00	....	\$7.75	\$10.00	\$11.75	\$13.75
1 5/8	....	6.00	6.25	6.75	7.25	7.75	....	8.50	10.75	12.50	14.50
2 1/16	....	....	8 25	8.75	9.50	10.25	....	11.25	13.00	15.00	18.00
2 1/8	....	....	9.25	9.75	10.50	11.25	....	12.25	14.00	16.00	19.00
2 1/4	....	....	11.50	13.00	14.00	16.00	....	17.50	19.00	22.00	25.00
2 3/8	....	....	13.50	15.00	16.00	18.00	....	19.50	21.50	24.00	27.00

PATENT UNIVERSAL DOUBLE BRACED RING OILING, BALL AND SOCKET HANGERS



Bearings Babbitted and Reamed

This Cast Iron Hanger is designed upon lines so as to distribute the metal in order that there is ample sufficiency of iron where it is most required and where the greatest strain takes place.

The Hanger Yoke is cast separate and is interchangeable with any drop of the same size shaft. This applies also to Universal Post Hangers, Pillow Blocks and Bracket Hangers.

The Bolts supporting the Yoke are integral with the Frame proper; thus strengthening the Hanger at one of the most important points that carry the load of the line shaft.

The Bearing is of the well known Ring Oiling Type, the superiority of which method of lubrication has been demonstrated by years of actual service.

The Reservoir when properly filled will amply lubricate the shaft from six to eight months without refilling.

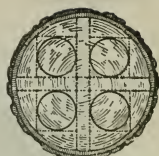
PRICE LIST

Shaft Size	Range of Drops in Inches										
	4 1/4 - 5 1/4	6-8	8-10	11-13	14-16	18-20	19-21	22-24	26-28	30-32	34-36
1 1/8	\$3.25	\$3.50	\$3.75	\$4.25	\$4.75						
1 1/4	4.00	4.50	4.75	5.25	5.75	\$6.50	\$7.00	\$7.50			
1 1/2	4.50	5.00	5.25	5.75	6.25	7.00	7.50	8.00			
1 3/4		6.00	6.25	6.75	7.25	7.75		8.50	\$10.75	\$12.50	\$14.50
2 1/8		7.00	7.25	7.75	8.25	8.75		9.50	11.75	13.50	15.50
2 1/4			9.25	9.75	10.50	11.25		12.25	14.00	16.00	19.00
2 1/2			10.25	10.75	11.50	12.25		13.25	15.00	17.00	20.00
2 3/4			12.50	14.00	15.00	17.00		18.50	20.00	23.00	26.00
3 1/8			14.50	16.00	17.00	19.00		20.50	22.00	25.00	28.00
3 1/4			19.50	20.50	22.50	25.00		26.50	28.50	30.50	33.50
3 1/2			21.50	22.50	24.50	27.00		28.50	30.50	32.50	35.50



The Old Way.
Note the Checks
from the Heart

CARPENTER'S QUARTER-SAWED ROCK MAPLE ROLLERS



The Carpenter
Way. No Hearts
in These Rollers
to Check.

THE TREATMENT AND CARE OF MAPLE ROLLERS

Checking in rollers is caused by surface of the roller drying out faster than the inside and the outer rim of fast drying wood shrinking and having to accommodate itself to the still damp and larger core. No matter how many years a maple square has aged in stock there is always some moisture present inside it and as soon as it is turned into a roller it starts drying out further. Checking can only be eliminated by taking great care of the rollers and seeing that they dry out evenly throughout which is almost impossible.

Heart wood is not of the same tensile strength, fibre, density or weight as the select sap wood surrounding it and cannot be made to dry out at the same rate as the sap wood.

The elimination of the heart in a roller practically prevents checking if the rollers lie unused awhile. The average man however, doesn't order his rollers until they are badly needed and they go into service at once. In these cases the rollers, as soon as they are received, and before being used should be given a coat of oil (linseed preferably but any heavy oil will do) and the ends painted to prevent the surface drying too fast. This is in a large measure helped by keeping them out of the sun in-so-far as is possible.

A heart roller weighs just as much as a Carpenter roller. Carpenter rollers last more than twice as long as others and the freight saving alone will just about pay the difference in cost.

We ask at least one week's time on each order for these rollers as they are never carried in stock but turned to suit the individual requirements of the order as it comes in, and then oiled, painted and inspected twice before leaving.

Size		List Price each	Weight, lbs.	Size		List Price each	Weight lbs.
Diameter, Inches	Length			Diameter Inches	Length		
3	3 ft.	\$0.50	7	7	5 ft.	\$ 4.90	68
3	4 ft.	.70	8	7	6 ft.	6.00	81
4	3 ft.	.90	11	7	7 ft.	7.10	95
4	4 ft.	1.20	15	7 1/2	4 ft.	4.60	64
4	5 ft.	1.50	19	7 1/2	4 ft. 8 in.	5.50	74
4	5 ft. 6 in.	1.70	21	7 1/2	5 ft.	5.90	80
5	3 ft.	1.40	20	7 1/2	6 ft.	7.20	96
5	4 ft.	1.90	26	8	4 ft.	5.40	74
5	5 ft.	2.40	33	8	4 ft. 8 in.	6.40	86
6	3 ft.	2.90	33	8	5 ft.	6.90	93
6	4 ft.	2.10	30	8	6 ft.	8.40	111
6	4 ft. 8 in.	2.80	40	8 1/2	7 ft.	10.00	130
6	5 ft.	3.30	47	8 1/2	5 ft.	9.00	110
6	6 ft.	3.55	50	8 1/2	6 ft.	10.75	132
7	3 ft.	4.25	60	8 1/2	7 ft.	13.00	154
7	4 ft.	2.90	40	9	5 ft.	12.00	130
7	4 ft. 8 in.	3.90	54	9	6 ft.	14.00	156
8	4 ft. 8 in.	4.55	62	9	7 ft.	16.00	172

Larger sizes take special list.

Intermediate sizes take next higher list.

In ordering always specify diameter and length.

SPECIAL MAPLE ROLLERS AND SQUARES

We can supply rollers of 10 inches to 14 inches in diameter if desired and large maple squares or heavy planking with no hearts in lengths up to 16 feet.

We also supply rollers with iron bands on the ends and with steel shafts through and projecting from each end for Mine and Conveyor rollers, etc., etc. Write for prices.

REGULAR HARD MAPLE HEART ROLLERS

Carried in stock for immediate delivery

Diameter	Length	Price	Diameter	Length	Price
7 1/2	4 ft. 8 in.	\$3.30	5	3 ft.	\$1.20
7	4 ft. 8 in.	3.10	5	6 ft.	2.40
7	6 ft.	4.00	4	3 ft.	1.00
7	4 ft.	3.00	4	4 ft.	1.40
7	3 ft.	2.10	4	5 ft.	1.80
6	4 ft. 8 in.	2.50	3 1/2	3 ft.	.80
6	4 ft.	2.10	3 1/2	4 ft.	1.20
6	6 ft.	3.20	3 1/2	5 ft.	1.40
6	3 ft.	1.60	3	3 ft.	.70
5	4 ft. 8 in.	1.80	3	4 ft.	.90
5	4 ft.	1.60			

FOR HOUSE RAISING SCREWS, JACKS AND DOLLIES, SEE INDEX

TRACK AND BALLAST JACKS



Fig. 6



Fig. 1



Fig. 116-117-118



Fig. 101

No. 6 Simplex Double Acting Ballast and Track Jack

For heavy track, ballast and crossing work. Massive construction is combined with proven material. Simplex mechanism, combined with careful design, resulting in increased efficiency, has led many of the leading railroads to adopt this Jack.

SPECIFICATIONS

Standard.....	Malleable Iron	Capacity, tons.....	15
Lever Socket.....	Crucible Steel	Lift, inches.....	18 1/2
Rack Bar.....	Drop Forging	Height, inches.....	31
Pawls.....	Drop Forging	Weight, with pole, lbs.....	96
List price.....		\$32.00	

No. 1 Simplex Double Acting Track Jack

Built for "above-the-average," really efficient duty on track, ballast or construction work. Keen attention to every detail, combined with Simplex mechanism and the resultant increased efficiency, has led to the adoption of this Jack by many of the largest railroads. All parts are heavier than average requirements might justify, but the Jack never fails on any demand.

SPECIFICATIONS

Standard.....	Malleable Iron	Capacity, tons.....	10
Lever Socket.....	Crucible Steel	Lift, inches.....	13 1/2
Rack Bar.....	Drop Forging	Height, inches.....	25
Pawls.....	Drop Forging	Weight, with pole, lbs.....	65
List price.....		\$18.00	

Nos. 116, 117 and 118 Simplex Surfacing Ballast and Track Jacks

Single Acting—Operating on the Down Stroke of the Lever, or Tripping at any Position.

A trio of track Jacks that have no equals for efficiency and simple design. The upper pawls, with rack engaging teeth at the bottom, swing as pendulums from the frames. The lower pawls which fulcrum in sockets in the frames, engage the rack bar teeth or may be pulled backward to engage the upper pawls in recesses provided to trip the load. In this way a tooth by tooth lowering device or a quick trip to low position is effected.

Each bearing is a heavy trunnion, cast integral with the lever socket, and rotates in a hardened steel, closed end, lubricant-retaining bushing.

No. 116. A Jack of small height, low lift and little weight, that is easily and quickly carried. Combining a tripping or tooth-by-tooth lowering device, it has power and speed for all surfacing work.

No. 117. The most simple, yet efficient design of track Jack built, and a great favorite for track work.

No. 118. For ballast work particularly, this is the ideal Jack. Of great height and lift. It easily raises the track clear of all ballast during construction, even though the ground, because of its softness, may allow the base to sink. As is often necessary, the track may be lowered gradually, or dropped all the way. This is accomplished by operating the two pawls. The upper one, with rack engaging tooth at the bottom, swings as a pendulum from the frame. The lower operates like those in the Nos. 116 and 117.

SPECIFICATIONS

Standard.....	Malleable Iron	No. 116	117	118
Lever Socket.....	Crucible Steel	Capacity, tons.....	10	15
Rack Bar.....	Drop Forging	Lift, inches.....	8	12½ 18¾
Pawls.....	Drop Forging	Height, inches.....	15¼	20½ 28
Bushings and Keys.....	Steel	Weight, with pole, lbs.....	46	55 70
List price, No. 116.....		\$20.00		
List price, No. 117.....		22.00		
List price, No. 118.....		32.00		

No. 101 Simplex Track Jack

Double Acting—Operating on the Up and Down Stroke of the Lever, or Tripping at any Position.

This Jack meets the demand for a compact double-acting Track Jack. It reduces the height of all former Jacks of equal lift, thereby reducing the weight accordingly. Yet because of its massive, heavy construction, it is the master for all work in connection with the heaviest rails.

SPECIFICATIONS

Standard.....	Malleable Iron	Capacity, tons.....	10
Lever Socket.....	Crucible Steel	Lift, inches.....	13 1/2
Rack Bar.....	Drop Forging	Height, inches.....	21
Pawls.....	Drop Forging	Weight, with pole, lbs.....	58
Bushings and Keys.....	Steel		
List price.....			\$22.00

SIMPLEX GEARED JACKS

Single Acting—Operating on the Down Stroke of the Lever

These Jacks are designed for easily handling loaded refrigerator and railroad cars, locomotives, or heavier industrial work. Cast integral with the frame is a gear case which houses a heavy drop forged pinion and ratchet wheel, both of which are heat treated and hardened. Engaging snugly with this pinion is a heavy rack, which is forged from chrome nickel steel. The pinion rotates on bronze bushings. The pawls, which are operated by the crucible steel socket, engage the teeth of the ratchet wheel so that it raises or lowers the rack bar on each stroke of the lever. These pawls are made of chrome nickel steel in the No. 25 Jack, and chrome vanadium steel in the No. 35. Under all circumstances the pawls are locked so that the load cannot be dropped. Carrying handles are provided upon each side. The raising and lowering movement of the rack bar is governed by the indicator upon the side of the Jack.

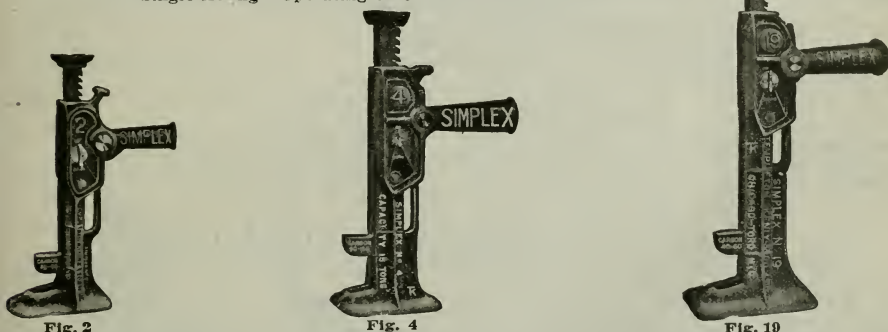
Each bearing is a heavy trunnion, cast integral with the socket and rotates in a hardened steel, closed end, lubricant-retaining bushing. Grease cups are provided where necessary.

SPECIFICATIONS

Standard.....	Malleable Iron	Pawls.....	Chrome Nickel Steel
Lever Socket.....	Crucible Steel	Bushings and Keys.....	Steel
Rack Bar.....	Chrome Nickel Steel	Capacity, tons.....	No. 25, 25 No. 35, 35
Ratchet Wheel.....	Drop Forging	Lift, inches.....	No. 25, 16½ No. 35, 16½
Pinion.....	Drop Forging	Height, inches.....	No. 25, 27 No. 35, 26½
Bearings.....	Bronze	Weight, with pole, lbs.....	No. 25, 150 No. 35, 200
Cap.....	Drop Forging		
List price, No. 25.....			\$100.00
List price, No. 35.....			135.00

SIMPLEX CAR, INDUSTRIAL AND BRIDGE JACKS

Single Acting—Operating on the Down Stroke of the Lever.



The Simplex mechanism locks the working parts in every position—a load can never drop. Each bearing is a heavy trunnion, cast integral with the lever socket, and rotates in a hardened steel, closed end, lubricant-retaining bushing.

The design and construction embody the most minute details to increase long life and service. Even an apron is provided over the socket opening to keep dirt from internal parts. Direction of operation is governed by the reversing indicator on the side.

No. 2. Simplex Industrial and Car Jack. Designed for use on interurban cars, for contractors and industrial service, as well as for track work. Heavy loads are easily handled, because of the high efficiency.

No. 4. Simplex Bridge or Car Jack. Designed for bridge and heavy construction work. Powerful, rapid, highly efficient and is built for rough, abusive service. The extra heavy base and reinforced standard, with high carbon-forged rack bar, provide a positive guarantee of a long, efficient life. Smaller details of design, such as an apron over the socket opening to keep dirt from internal parts, are carefully watched.

No. 10. Simplex Car, Industrial and Bridge Jack. The specifications, construction and power of this Jack have produced the basis of economy in car and bridge repainting.

SPECIFICATIONS

Standard.....	Malleable Iron	No.	2	4	10
Lever Socket.....	Crucible Steel	Capacity, tons.....	10	15	15
Rack Bar.....	Drop Forging	Lift, inches.....	12	11½	17½
Pawls.....	Drop Forging	Height, inches.....	20½	22½	28
Bushings and Keys.....	Steel	Weight, with pole, lbs.....	66	91	94
List price.....			\$25.00	\$35.00	\$35.00

FOR PINCH AND CROW BARS, CHAIN AND ROLLERS, SEE INDEX

JACKS



Fig. 315



Fig. 50



Fig. 51



Fig. 55

No. 315 SIMPLEX ORDNANCE AND EMERGENCY JACK

Single Acting—Operating on the down stroke of the lever.

In addition to the recessed chain cap, chain and pivoting standard of the No. 310 Emergency Jack, there is an auxiliary detachable shoe which fits snugly in the recessed chain cap. This shoe swings free upon its axis in the cap and operates at any angle within a radius of 180°, irrespective of the angle at which the Jack is inclined. It adds another lifting point and gives the Jack a greater range of lift. A load may be handled at any point, on cap, shoe or bottom foot, or, if occasion demands, the shoe may be detached or used in conjunction with the chain.

The base is large and massive, especially designed for field work. It may be anchored at any position by means of the stake hole and two recesses at the rear.

This Jack is used for every kind of emergency or industrial purpose, or for Ordnance Departments, to lift guns that are mired or to support them in action; on board ship for use in narrow shaft alleys or confined spaces or for stiffening and strengthening bulkheads.

STANDARD EQUIPMENT

Five-foot heavy Chain with Grab Hook attached.

Five-foot Steel Lever Bar—Pinch Bar construction.

Auxiliary detachable shoe.

SPECIFICATIONS

Standard and Base.....	Malleable Iron	Lift, inches.....	12
Lever Socket.....	Drop Forging	Height, inches.....	23 ¾
Rack Bar.....	Chrome Nickel D. F.	Weight:	
Pawls.....	Drop Forging	Jack, lbs.....	62
Bushings and Keys.....	Steel	Chain lbs.....	15
Auxiliary Shoe.....	Chrome Nickel D. F.	Auxiliary Shoe, lbs.....	5
Capacity, tons.....	15	Bar, lbs.....	17
		Total weight, lbs.....	99

Price, each \$20.00

Nos. 50, 51 AND 55 SIMPLEX INDUSTRIAL JACKS

Single Acting—Operating on the down stroke of the lever bar.

Jacks Nos. 50 and 51 are especially designed for every kind of industrial service; for light cars, mining, factory and agricultural service.

Number 55 Jack is quickly adjusted to a load at any height. It is ideal for any kind of truck, industrial, mining or agricultural work. The adjustable shoe can be raised or lowered on the H-beam rack, locking firmly at any position in the circular recesses provided.

Operation is highly efficient and minimum work is necessary for the heaviest loads. Each bearing is a heavy trunnion, forged integral with the lever socket, and rotates in a hardened steel, closed end lubricant-retaining bushing.

Simplex mechanism locks the working parts in every position—a load can never be dropped.

The reversing device on the side, when revolved a half circle, changes direction of operation. The socket when not in use folds into a vertical position, thereby minimizing storage space.

In numbers 50 and 51 the steel lever pole is of pinch bar design—a handy tool for any work.

SPECIFICATIONS

Standard.....	Malleable Iron	Pawls.....	Drop Forging
Lever Socket.....	Drop Forging	Bushings and Keys.....	Steel
Rack Bar.....	Drop Forging	Lever Bar.....	Steel

Chamber	No. 50	No. 51	No. 55
Capacity, tons.....	5	5	10
Lift, inches.....	8 ½	13 ½	10 ½
Height, inches.....	15 ½	20	17
Weight with bar, lbs.....	32	38	40
List Price.....	\$20.00	\$22.00	\$30.00

FOR ROLLERS, PINCH AND CROW BARS, SEE INDEX

SIMPLEX JACKS

No. 310. SIMPLEX EMERGENCY JACK

Single Acting—Operating on the Down Stroke of the Lever

This Jack is really a combination of a Crane and a Jack. It pivots on its own base from 30° to 90° to the horizontal and lifts, lowers, pushes or pulls at any angle.

The base of the standard rests, with a machine fit, upon two curved shoulders which project upward from, and form a part of the base. Two studs hold it in position. The base, therefore, takes all thrust. A double socket is provided by means of which the lever pole is always in a convenient position—no matter what the angle of the Jack may be.

The Cap is recessed to firmly hold the links of a chain when they are dropped in position. The cap, at its "V" notched side, quickly engages wooden beams, or boxes, or because of its corrugated surface, maintains a firm contact against metal surfaces when pushing at any angle. The Jack can never slip because of the heavy calks at the bottom of the base. The bearings are massive trunnions, forged integral with the lever socket and rotate in hardened steel closed end, lubricant-retaining bushings.

Direction of operation is governed by the reversing lever on the side.

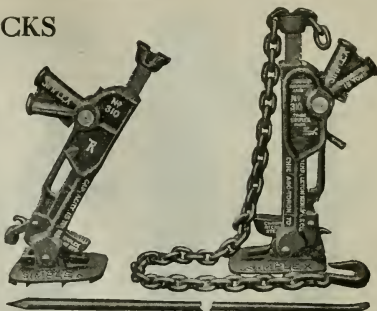


Fig. 310

STANDARD EQUIPMENT

Five-foot Chain with Grab Hook.

Five-foot Steel Lever, Pinch Bar and Car Mover combined.

SPECIFICATIONS

Standard and Base.....	Malleable Iron
Lever Socket.....	Drop Forging
Rack Bar.....	Chrome Nickel D. F.
Pawls.....	Drop Forging
Bushings and Keys.....	Steel
Lever Bar.....	Steel

Capacity, tons.....	15
Lift, inches.....	12 1/2
Height, inches.....	21 1/2
Weight of Jack, lbs.....	59
Weight of Chain and Bar, lbs.....	30
Total weight, lbs.....	89

Price.....

\$20.00

No. 318. SIMPLEX POLE JACK

Single Acting—Operating on the Down Stroke of the Lever, or Tripping at any Position

This Jack has all the features of the No. 310 so far as pivoting on its base, recessed chain cap, double socket and general construction is concerned. Added to this is the feature of tripping the

load from any point back to low position. It has far greater height and lift, however, to enable its being used in many places in which the No. 310 or 315 would not be of sufficient lift. In pulling a telephone pole, or for sawing off a decayed base, it is possible to get hold high and lift fully two feet. If this is insufficient lift, the pole is held, the cap quickly tripped to low position and a new hold taken. Only a fraction of the time required by any other method is necessary. The big saving of labor and expense usually affects an entire pole pulling crew.

There are numerous other demands for this Jack on railroads, in construction and industrial fields.

STANDARD EQUIPMENT

- 8 foot Hand-forged Chain, with pear-shaped link
- 5 foot Steel Lever or Pinch Bar.
- 2 feet of 10 inch, 25 lb. I Beam Base Support.

SPECIFICATIONS

Standard and Base.....	Malleable Iron
Lever Socket.....	Drop Forging
Rack Bar.....	Chrome Nickel Steel
Pawls.....	Drop Forging
Bushings and Keys.....	Steel
Capacity, tons.....	15
Lift, inches.....	24
Height, inches.....	39
Weight of Jack, lbs.....	34
Weight of Chain, lbs.....	17
Weight of Bar, lbs.....	17
Total weight, lbs.....	189
Price.....	\$35.00

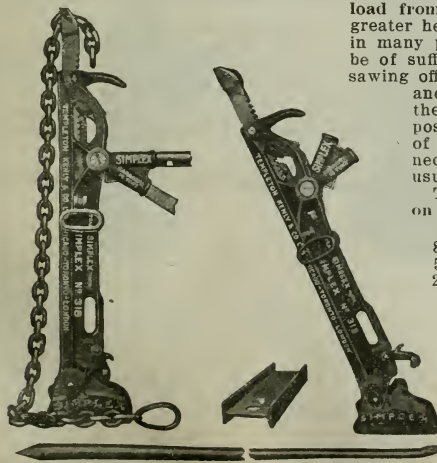


Fig. 318

FOR ROLLERS, WIRE ROPE, CHAIN, ETC., SEE INDEX

AUTOMOBILE JACKS



Fig. 36



Fig. 41

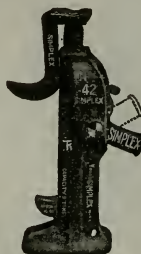


Fig. 42



Fig. 43

NO. 36 SIMPLEX AUTOMOBILE JACK

This little Jack is carefully designed and constructed throughout of high quality, homogeneous, malleable castings. The middle shoe, which is integral with the rack bar, supplies an extra lifting point—useful in many awkward positions. The rack bar teeth and all working parts are machined.

Every Simplex Automobile or Truck Jack, with equipment, is neatly and securely packed in a heavy corrugated board box. The attractive label plainly shows the contents. This insures a clean stock, quickly locates any size of Jack, economizes storage space and avoids further packing for reshipment.

Price \$1.50

Capacity, lbs.	1,000
Lift, inches.	6½
Height, inches.	10
Weight, lbs.	5

A 12 inch Hard Maple Lever Bar is Furnished with Jack

NOS. 41, 42, 43, SIMPLEX AUTOMOBILE AND INDUSTRIAL JACKS

Double Acting—Operating on the up and down stroke of the lever bar.

These Jacks are miniatures of the larger Simplex Jacks. The same care in construction and design is present, with the addition of a valuable asset—a detachable shoe. This shoe, fitting snugly in the cap, swings in a radius of 180° and is available in every position. A load may be handled at any point because of the foot, the shoe and the cap—three carrying points.

The arc of travel of the steel lever bar is small, hence the load never obstructs movement of the hand. These Jacks are so highly efficient that the effort expended is about the same as that on the very best geared Jack.

Direction of operation is regulated by the lever on the side.

It would not be possible to build an Auto Jack of better material than is used in any of the above Jacks.

SPECIFICATIONS

Standard Malleable Iron
Lever Socket. Drop Forging
Rack Bar. Drop Forging
Pawls Drop Forging
Bushings and Keys. Steel
Lever Bar. Steel
Detachable Shoe. Drop Forging

	No. 41	No. 42	No. 43
Capacity, tons.	1	2	3
Height, inches.	10	11½	13
Lift, inches.	7	8½	10
Weight, with bar, lbs.	9½	11	13
Price each.	\$4.25	\$5.00	\$6.00

FOR TIRES, TUBES, TOOL KITS, ETC., SEE INDEX

BALL-BEARING JACKS



Figs. 103 and 104



Fig. 105



Figs. 101 and 102

No.	Capacity tons	Height inches	Rise inches	Diameter of Case, inches	Weight pounds	Price	Hook Extra
103	15	20	9	12	80	\$60.00	\$5.00
104	15	22	10	10	80	60.00	6.00
105	15	26	13	10	92	70.00	6.00
101	25	33	20	12	154	95.00	6.00
102	15	34	20	12	154	75.00	6.06

Hook can be used for low set loads. This comes extra, as is shown in list.



Fig. 104F



Fig. 105F



Figs. 113, 114, 115

No.	Capacity tons	Height inches	Rise inches	Size of Base, inches	Weight pounds	Price
104F	15	22	10	7x9	80	\$60.00
105F	15	26	13	7x9	110	70.00
113	35	22	10	8x9	190	130.00
114	25	22	10	8x9	136	90.00
115	25	26	13	8x9	157	96.00

Foot of Jack is intended to lift only one-half full capacity.

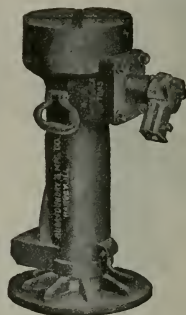
BALL-BEARING JACKS



Fig. 118



Fig. 119

Figs. 116, 117, 125
Extra Heavy

Style	Capacity tons	Height inches	Rise inches	Diameter of Base, inches	Weight pounds	Price
118	35	26	13	12	175	\$138.00
119	35	32	19	12	185	138.00
116	50	24	9	14	270	150.00
117	50	27	13	14	292	150.00
125	60	26	12	14	323	175.00

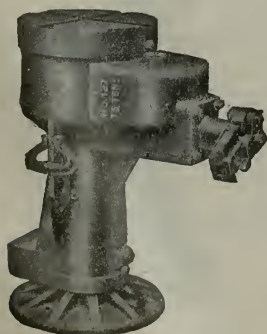


Fig. 127



Figs. 109, 111

Fig. 110
Showing Hook for Low Set Loads

No.	Capacity tons	Height inches	Rise inches	Diameter of Base, inches	Diameter of Head, inches	Weight pounds	Price	Hook Extra
127	75	26	12	14	12	385	\$200.00	....
109	25	20	9	10	..	106	80.00	\$6.00
110	25	24	11	13	..	149	85.00	6.00
111	25	26	13	12	..	164	90.00	6.00

Foot of Jack is intended to lift only one-half capacity.

HYDRAULIC JACKS

Capac. Tons	Rise inches	Broad Base			Plain Base		
		Height when Down inches	Weight lbs.	Price	Height when Down inches	Weight lbs.	Price
4	12	24	67	\$62.00	24 1/2	55	\$58.00
7	12	25	85	68.00	25 1/4	67	62.00
7	18	31	97	74.00	31 1/4	77	68.00
7	24	37 1/2	110	80.00	38	95	74.00
10	12	25	120	76.00	25 1/4	97	66.00
10	18	31	130	88.00	31 1/4	110	76.00
10	24	37 3/4	150	100.00	38	128	86.00
15	12	25 1/2	145	100.00	25 1/2	118	82.00
15	18	31 1/2	162	116.00	31 1/2	135	96.00
15	24	38	185	132.00	38	155	110.00
20	12	26 1/2	180	124.00	26 1/2	150	96.00
20	18	32 1/2	206	144.00	32 1/2	174	118.00
20	24	38 1/2	231	164.00	38 1/2	197	140.00
30	9	23	215	152.00	22 1/2	176	128.00
30	12	26 1/2	220	162.00	26	188	136.00
30	18	32 1/2	250	190.00	32	220	160.00
40	12	26 3/4	260	200.00	26 1/2	240	176.00
40	18	33	294	230.00	33	272	200.00
50	12	28	320	240.00	27	270	206.00
50	18	34 1/2	355	270.00	....	...	.....

Note:—40 and 50 ton are all steel.

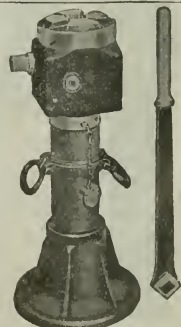
CLAW

Capacity Tons	Rise inches	Height when Down inches	Height of Claw inches	Weight lbs.	Price
4	12	24 1/2	5	78	\$66.00
7	12	25	5	95	74.00
7	18	31	5	110	80.00
10	12	26	6	145	84.00
10	18	32	6	162	94.00
15	12	25 3/4	6 1/2	175	120.00
15	18	32	6 1/2	195	136.00
20	12	26 1/2	6 1/2	220	160.00
20	18	32 1/2	6 1/2	240	180.00
30	12	26 1/2	8	280	200.00
30	18	32 1/2	8	310	220.00
40	12	26 1/2	8	310	240.00

BROAD BASE KEY RELEASE

Capacity Tons	Rise inches	Height when Down inches	Diameter of Base inches	Weight lbs.	Price
10	12	27	12	115	\$100.00
10	18	33	12	130	110.00
15	12	27 1/2	12	155	120.00
15	18	33 1/2	12	175	130.00
20	12	28	13	190	140.00
20	18	34	13	220	150.00
30	12	28 1/2	13 1/2	230	160.00
30	18	34 1/2	13 1/2	270	170.00
40	12	29	13 3/4	270	200.00
40	18	35	12 3/4	310	210.00

This Jack is lowered by means of a key which is independent of the lever used in raising.

Fig. 2151B
Plain BaseFig. 2152
ClawFig. 2153
Broad Base Key
Release

STONE AND MACHINERY JACKS

BEST STEEL FORGINGS, ALL GEARS CUT

WOOD FRAME STONE JACKS

For use in stone and marble yards, stone quarries, foundries and machine shops. Also for moving and erecting machinery.

An iron housing protects the rack, pinion and gears. Nothing to get out of order. The rack, pinion and gears are forged from steel blanks and the teeth are cut.

Can be operated at any angle, base being fitted with prongs to prevent slipping.

All jacks are furnished with swivel head foot lift and crank.

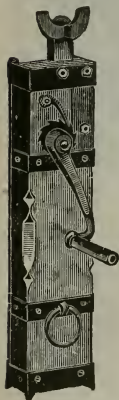


Fig. 667A
Front View

Tonnage	Height inches	Weight lbs.	Price
2	34	95	\$45.00
3	34 ½	110	50.00
4	35	120	55.00
5	36	135	62.00
6	36 ½	150	70.00
8	37	185	85.00
10	37 ½	200	110.00
12	38	230	120.00
15	39	275	140.00
18	39	300	150.00
20	39	315	162.50
25	39	350	175.00
30	39	400	200.00



Fig. 667B
Back View

PATENT IRON FRAME STONE JACK

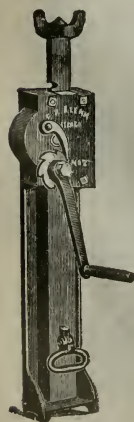


Fig. 667C
Front View

Tonnage	Height inches	Weight lbs.	Price
2	32	75	\$45.00
3	32 ½	85	50.00
4	34	100	55.00
5	34	115	62.00
6	35	135	70.00
8	36	160	85.00
10	36	170	110.00
12	37	200	120.00
15	39	225	140.00



Fig. 667D
Back View

LOCOMOTIVE JACK SCREWS

All Screws are warranted to carry load specified. Levers will be sent only when ordered and will be charged for. See list in other column.



Fig. 214A

Diam. of Screw Inches	Height of Stand Inches	Price	Diam. of Screw Inches	Height of Stand Inches	Price
1 1/4	4	\$2.90	2 1/4	6	\$7.00
1 1/4	6	3.10	2 1/4	8	7.50
1 1/4	8	3.40	2 1/4	10	8.25
1 1/4	10	3.80	2 1/4	12	9.00
1 1/4	12	4.20	2 1/4	14	10.00
1 1/4	14	4.60	2 1/4	16	11.00
1 1/2	4	3.25	2 1/4	18	12.00
1 1/2	5	3.50	2 1/4	20	13.25
1 1/2	6	3.75	2 1/4	22	14.50
1 1/2	8	4.25	2 1/4	24	15.75
1 1/2	10	4.75	2 1/2	6	7.75
1 1/2	12	5.25	2 1/2	6 1/2	8.00
1 1/2	14	6.00	2 1/2	8	8.75
1 1/2	16	6.75	2 1/2	10	9.75
1 3/4	6	4.50	2 1/2	12	10.75
1 3/4	8	5.00	2 1/2	14	12.00
1 3/4	10	5.75	2 1/2	16	13.25
1 3/4	12	6.25	2 1/2	18	14.50
1 3/4	14	6.75	2 1/2	20	15.75
1 3/4	16	7.50	2 1/2	22	17.00
1 3/4	18	8.50	2 1/2	24	18.25
2	5	5.00	2 1/2	28	22.00
2	6	5.25	2 1/2	32	26.00
2	8	6.00	3	14	19.50
2	10	6.75	3	16	20.75
2	12	7.50	3	18	22.00
2	14	8.25	3	20	23.25
2	16	9.25	3	22	24.50
2	18	10.25	3	24	25.75
2	20	11.50	3	30	30.00
2	22	12.50	...	...	...
2	24	13.50	...	...	...

TABLE OF CAPACITIES

Screws, Inches	Capacity, tons	For Height Over all add to Height of Stand, Inches
1 1/4	10	2 3/4
1 1/2	12	2 1/2
1 3/4	16	2 3/4
2	20	3 1/4
2 1/4	24	3 3/4
2 1/2	28	4
3	36	4 1/2

OUR LINE OF JACK SCREWS IS ALWAYS COMPLETE AND WE ARE PREPARED TO FURNISH ONE OR A HUNDRED FROM CHICAGO STOCK

HOUSE RAISING SCREWS


Fig. 214B.
Cap

Fig. 214
Cast Iron

These Screws are cast with seamless threads which make them very smooth and uniform.

Diameter of Screw Inches	Height Over all Inches	Each
3	20	\$3.50
3	22	3.75
3	24	4.00
3	26	4.25
3	28	4.50
3	30	4.75
3	32	5.00
3	34	5.25
3	36	5.50

Extra caps, each list \$0.50
Jack bars, each list60

TELESCOPIC JACK SCREWS



Fig. 218A



Fig. 218B

Size No.	Tons	Stand, Inches	Net Rise Inches	Price Fig. 1	Price Fig. 2
1	10	10	11	\$14.00	\$20.00
2	25	14	16	18.00	24.00
3	25	17	23	22.00	28.00
4	25	21	31	28.00	30.00
5	25	25	36	30.00	36.00

Fig 218a represents the Jack with wrench lever, Fig. 218b, ratchet lever.

JACK SCREWS



BELL BASE RATCHET

This Jack has wrought iron screw, cast iron stand and cap, and steel ratchet, pawl and handle.

CAPACITY

2	inch Screws	24	Tons
2 1/4	"	28	"
2 1/2	"	32	"
2 3/4	"	36	"
3	"	40	"

Fig. 381

Dia. of Screw in.	Height Over All in.	Price	Dia. of Screw in.	Height Over All in.	Price
2	12	\$16.00	2 1/2	22	\$24.50
2	14	16.75	2 1/2	24	25.50
2	16	17.50	2 1/2	26	26.50
2	18	18.25	2 1/2	28	27.75
2	20	19.00	2 1/2	30	29.00
2	22	19.75	2 1/2	34	33.00
2	24	20.50	2 1/2	36	35.00
2	26	21.50	2 1/2	38	37.00
2	28	22.50	2 3/4	20	27.50
2	30	23.50	2 3/4	24	30.00
2 1/4	18	21.00	2 3/4	28	32.50
2 1/4	20	22.00	2 3/4	30	34.00
2 1/4	22	23.00	2 3/4	36	40.00
2 1/4	24	24.00	3	20	32.00
2 1/4	26	25.00	3	24	35.00
2 1/4	28	26.00	3	26	37.00
2 1/4	30	27.00	3	28	38.50
2 1/2	18	22.50	3	30	40.00
2 1/2	20	23.50	3	36	48.00

RATCHET CARRYING

This Jack has a steel base, brass nuts and wrought iron screws and legs. The ratchets, pawls and handles are made of steel and malleable iron.



Fig. 382

Capacity, tons	36
Diameter of Lifting Screw, in.	2 3/4
Diameter of Traverse Screw, in.	1 3/8
Length of Lifting Screw, in.	18
Length of Traverse Screw	18
Height over all	26
Price	\$140.00



Fig. 383

TRIPOD RATCHET

Tripod Jack Screws have wrought iron screws, legs and bases, brass nuts and steel ratchets, pawls and handles.

CAPACITY

2 1/4	inch Screws	28	Tons
2 1/2	"	32	"
2 3/4	"	36	"
3	"	40	"

Dia. of Screw in.	Height Over All in.	Price	Dia. of Screw in.	Height Over All in.	Price
2 1/4	18	\$50.00	2 1/2	36	\$67.00
2 1/4	20	51.00	2 1/2	24	65.00
2 1/4	22	52.00	2 1/2	26	66.25
2 1/4	24	53.00	2 1/2	28	67.50
2 1/2	18	56.50	2 1/2	30	68.75
2 1/2	20	57.50	2 1/2	36	73.00
2 1/2	22	58.50	3	24	70.00
2 1/2	24	59.50	3	26	71.50
2 1/2	26	60.75	3	28	73.00
2 1/2	28	62.00	3	30	74.50
2 1/2	30	63.25	3	36	79.00

CABLE REEL

Lever will be sent only when ordered, and will be charged extra

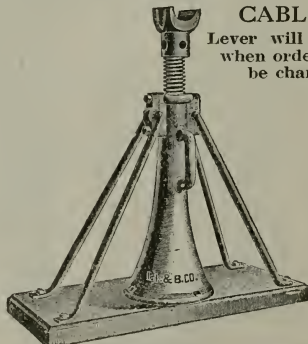


Fig. 384

Dia. of Screw in.	Ht. Over All when Closed inches	Rise in.	Capacity Tons	Wt. about lbs.	Size of Base	Price
2	19	8	24	50	2x10x20	\$15.00
2	21	10	24	55	2x10x22	16.00
2	27	16	24	72	2x11x30	18.00
2 1/2	16	4	30	47	2x11x20	16.50
2 1/2	28	16	30	89	2x11x30	24.00
3	29	15	36	130	3x11x30	36.00
3	35	21	36	143	3x11x30	42.00

JACKS

PEARSON RATCHET PULLING JACKS



Fig. 212A

With Hooks for Pulling



Fig. 212B

With Spud Ends for Pushing

Capacity tons	Price Each	Length Closed inches	Run of Screws inches	Weight pounds
7	\$17.50	33	12	35
10	22.50	33	12	50

Capacity tons	Wt. lbs.	Length Closed with Hooks Dropped inches	Length Closed with Hooks Extended inches	Run of Screw	Price Each
7	50	33	39 1/2	18	\$22.50

PEARSON'S CAR REPLACING JACK

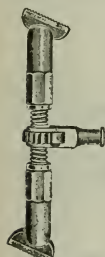


Fig. 212C

With Socket Bearing Head and Foot

Capacity.....50 tons per pair
 Weight.....85 pounds each
 Length, closed.....28 inches
 Hoist.....14 inches
 Price per pair.....\$67.50

SCREW TRACK JACK

Capacity.....12 tons
 Diameter Screw..1 1/2 inches
 Length Screw....18 inches
 Price each.....\$13.00

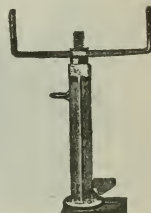


Fig. 212D

PULLING AND PUSHING RATCHET JACKS, OR STEAMBOAT RATCHETS



Fig. 212E

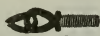


Fig. 212F



Fig. 212G



Fig. 212H

Have capacity of 7 to 10 tons, and are double acting, which enables the operator to "pull" or "let go" without changing his position, by reversing. Can be worked in any position.

18 inch barrel, 1 3/8 inch screw.....	each	\$7.00
24 inch barrel, 1 3/8 inch screw.....	"	7.50
30 inch barrel, 1 3/8 inch screw.....	"	8.00
36 inch barrel, 1 3/8 inch screw.....	"	9.50
24 inch barrel, 1 3/4 inch screw.....	"	16.00
30 inch barrel, 1 3/4 inch screw.....	"	17.00
26 inch barrel, 1 3/4 inch screw.....	"	18.00

We can furnish with any desired attachments as illustrated. Unless specified we will ship attachment as shown in complete Jack.

WINCHES—DRUMS

SAFETY WORM
GEAR WINCH

Fig. 6318

The worm gear enables the Winch to hold the load at any point when the handle is released.

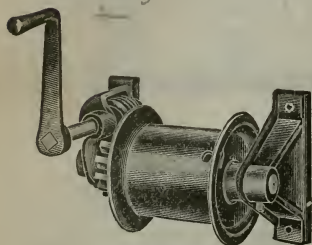
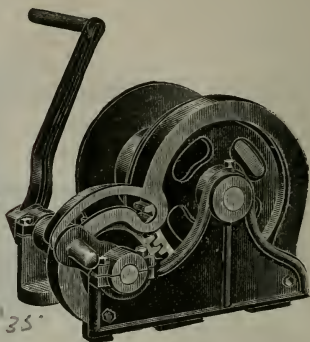
Especially adapted for raising and lowering electric lights, chandeliers, doors, partitions, etc.

Capacity 500 lbs.
Weight 56 lbs.
Size of Drum... 5½x6 inches
Price \$9.00

If a heavier Winch is required, we have in the same style:

No. 6319. Size of drum, 5½x6 inches, capacity 750 lbs. Price.....\$12.00

No. 6317. Size of drum, 8x10½ inches, capacity, 1200 lbs. Price..... 15.00

Fig 6318
Worm GearFig. 6240
Peerless

PEERLESS HAND POWER WINCH

Fig. 6240

This is a sturdy little hand power Winch, low in price but sure on the lift. An improved pawl holds the load at any point. The Winch is well made in every respect and is extremely handy.

Capacity 1000 lbs.
Drum 6 inch diameter, 5½ inches long
Flanges 2½ inches wide
Weight 30 lbs.
Price \$10.65

SMALL WINCH, NOT GEARED

Fig. 2544

This Winch is made in two sizes, 3½x12 inches and 14 inches. Equipped with band brake mounted to steel frame and equipped with clamps so that it can be clamped to 6x6 or smaller. This Winch is all right where light loads are to be hoisted. Can be used with cable or ½ to ¾ inch rope.

Price, including clamps and brake.....\$6.00

SMALL SINGLE DRUM GEARED WINCH

Fig. 2545

This Winch is made in one size. The drum is 4x8 inches, large gear 12 inches, pinion 3 inches. Both gears are made out of malleable. The main frame is made in one piece and is also of malleable iron, which makes it very compact and strong, and very light to get around with. The weight of the Winch complete with handles is 65 lbs.

This Winch has a drum capacity of 300 feet of ¾ inch cable.

Price \$9.00

including band brake.
If clamps to clamp to 6x6 post are desired, add \$0.50.

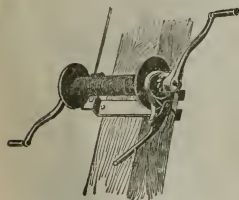


Fig. 2544

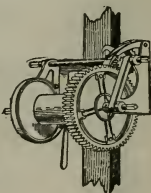


Fig. 2545

DRUMS FOR HAND POWERS

Hand Powers are always furnished with Straight Drums, unless otherwise specified.

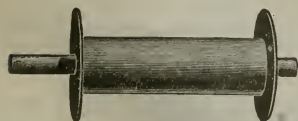


Fig. 195A. Straight



Fig. 195B. Full Nigger Head

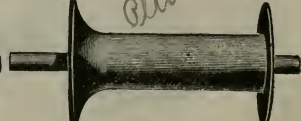


Fig. 195C. Half Nigger Head

4x16 Cast Iron Drums with Shaft.....\$6.00
4x24 Cast Iron Drums with Shaft..... 7.00
8x16 Cast Iron Drums with Shaft..... 10.00
9x21 Cast Iron Drums with Shaft..... 11.00
6x21 Cast Iron Drums with Shaft..... 10.00

6x26 Cast Iron Drums with Shaft.....\$11.00
6x30 Cast Iron Drums with Shaft..... 12.00
Concave for No. 15 Power..... 6.00
Extra for brake cast on end of drum..... 3.00

NIGGER HEADS

4 inch small diameter, 6 inch flange diameter x 6 inches long.....\$4.50
6 inch small diameter, 9 inch flange diameter x 7 inches long..... 6.00
5½ inch small diameter, 11½ inch flange diameter x 8 ½ inches long..... 7.00

FOR WOOD AND STEEL PULLEYS AND SHAFING, SEE INDEX

SASGEN WINCHES AND SLINGS

DOUBLE DRUM GEARED WINCH

Gears and Frame Made of Best Malleable

Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Lift 2 Men Single Block lbs.	Lift 2 Men Double and Triple Block lbs.	Price Each
5x14	18x4	3000	6000	\$48.75
5x16	18x4	3000	6000	50.00
5x18	18x4	3000	6000	51.25
7x14	18x4	3000	6000	52.50
7x16	18x4	3000	6000	53.75
7x18	18x4	3000	6000	55.00

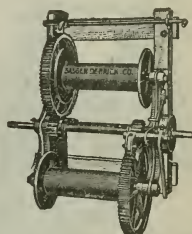


Fig. 5721

SINGLE DRUM GEARED WINCH

Gears and Frame Made of Best Malleable

Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Lift 2 Men Single Block lbs.	Lift 2 Men Double and Triple Block lbs.	Price Each
5x14	18x4	3000	6000	\$25.00
5x16	18x4	3000	6000	25.60
5x18	18x4	3000	6000	26.25
7x14	18x4	3000	6000	27.50
7x16	18x4	3000	6000	28.75
7x18	18x4	3000	6000	30.00

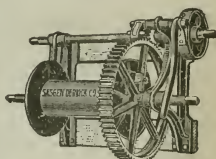


Fig. 5722

SMALL SINGLE DRUM GEARED WINCH

Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Lift 2 Men Single Block lbs.	Lift 2 Men Double Block lbs.	Price Each	
				Without Bushings	With Bushings
4x8	12x3	2000	3000	\$13.10	\$14.35

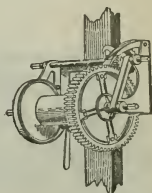


Fig. 5723

SINGLE SHAFT GEARED WINCH

This Winch Can Be Changed from Direct to Compound in One Second by Operating a Small Lever

Diameter and Length of Drum Inches	Diameter of Gear and Pinion Inches	Lift 2 Men Single Block lbs.	Lift 2 Men Double Block lbs.	Price Each	
				With Bushings	With Clamps
4x8	12x3	2000	3000	\$17.50	\$18.10



Fig. 5724

WHEELBARROW CHAIN SLING WITH AUTOMATIC HOOK

All complete, ready to attach to your barrow. The handiest device on the market.....price each \$2.20



Fig. 5725

FOR STEAM AND BELT DRIVEN WINCHES AND HOISTS, SEE INDEX

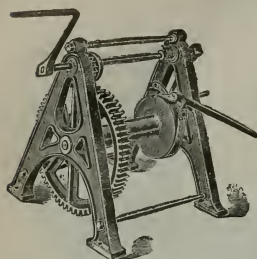


Fig. 6250. Style No. 10, Single Purchase without Nigger Head

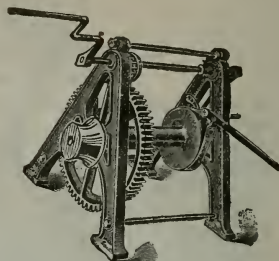


Fig. 6250A. Style No. 10, Single Purchase with Nigger Head

HOISTING WINCHES

IRON FRAME WITH BRAKE

CAPACITY FOR FOUR MEN

No.	Diameter and Length of Drum inches	Diameter of Gear and Pinion	Approx. Speed of Rope per Minute on Drum in feet	Lift of Two Men, Direct Single Line lbs.	Lift with Double and Triple Blocks Two Men, lbs.	Price without Nigger Head	Price with Nigger Head	Size of Nigger Head inches
6250	4½ x 12	18-6	12	900	4,500	\$29.00	\$36.00	4x6
6252	4½ x 16	24-4	6	1,800	9,000	36.00	44.00	4x6
6253	5 x 18	25-4	6½	2,500	12,500	45.00	53.50	4x6

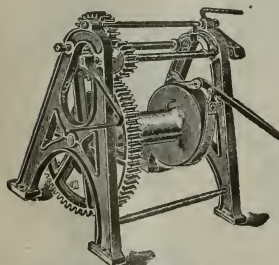


Fig. 6258. Style No. 11, Double Purchase without Nigger Head

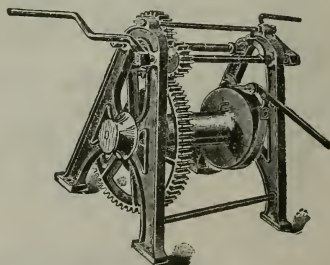


Fig. 6258A. Style No. 11, Double Purchase with Nigger Head

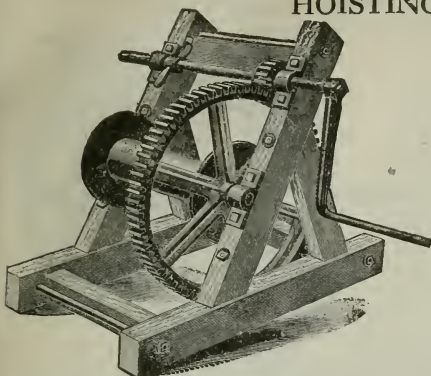
CAPACITY FOR FOUR MEN

No.	Diameter and Length of Drum inches	Diameter of Gears and Pinion	Approx. Speed of Rope per Minute on Drum in feet	Lift of Two Men, Direct Single Line lbs.	Lift with Double and Triple Blocks Two Men, lbs.	Price without Nigger Head	Price with Nigger Head	Size of Nigger Head inches
6258	4½ x 16	24- 9 -4	2¾	3,000	15,000	\$42.00	\$50.50	4x6
6260	5 x 19	27-13½-4	1¾	4,500	22,500	61.00	70.50	6x7
6262	6½ x 22	33-13½-5½	3½	5,000	25,000	75.00	85.00	6x7
6263	9 x 16	25- 8½-4	5½	3,000	15,000	60.00	68.50	4x6

Extra for machine with wheel brake, add \$5.00 to list price.

WE CAN FURNISH THE ABOVE WITH PLATE STEEL SIDES. PRICES ON APPLICATION

HOISTING WINCHES



Style 18. Fig 6298

Fig. 6298 WOOD FRAME WINCH

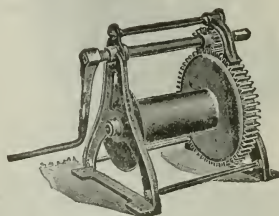
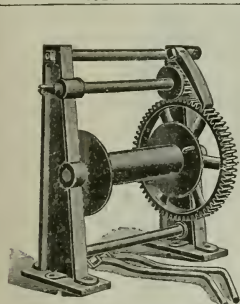
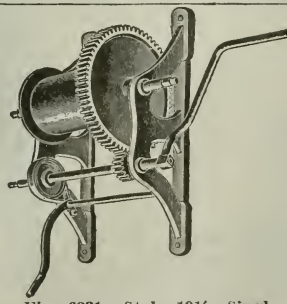
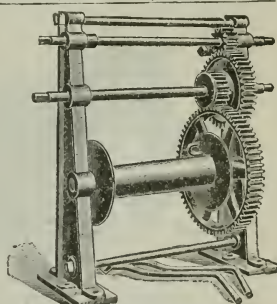
Style No. 18 Portable Winch, Single Drum, Single Purchase
CAPACITY FOR FOUR MEN

Fig. 6320. One Man Winch

No.	Diameter and Length of Drum inches	Diameter of Gear and Pinion inches	Approx. Speed of Rope per Minute on Drum in feet	Lift of Two Men, Direct Single Line, lbs.	Lift with Double and Triple Blocks Two Men, lbs.	Price
6298	6x21	28x4	6 3/4	2000	10000	\$35.00
6300	6x30	28x4	6 3/4	2000	10000	35.00
6301	9x16	28x4	10	1500	7500	35.00
6302	9x21	28x4	19	1500	7500	37.00

Fig. 6320 ONE MAN WINCH. IRON FRAME
Capacity 500 lbs.

No.	Diameter and Length of Drum, inches	Diameter of Gear and Pinion, inches	Price
6320	5x12	14x2 1/2	\$15.00

Fig. 6288. Single Purchase
Wagon WinchFig. 6321. Style 19 1/2, Single
Drum, Single Purchase,
with BrakeFig. 6289. Double Purchase
Wagon WinchFigs. 6288-6289 IRON FRAME WAGON WINCHES
CAPACITY FOR FOUR MEN

No.	Diameter and Length of Drum inches	Diameter of Gear and Pinion inches	Lift with One Man lbs.	Capacity with Four Men lbs.	Price
6288	4x16	16-4 1/4	600	2400	\$25.00
6289	4x16	16-9 1/4-3	1400	5600	37.50

Fig. 6321 HAND POWER WINCH
CAPACITY FOR TWO MEN

No.	Diameter and Length of Drum inches	Diameter of Gear and Pinion inches	Speed of Rope per Minute on Drum in feet	Lift of Two Men, Direct Single Line, lbs.	Lift with Double and Triple Blocks, Two Men, lbs.	Price
6321	6x16	16x4	15 1/2	600	3000	\$25.00

FOR STEAM AND ELECTRIC WINCHES, SEE INDEX

HOISTING WINCHES AND HAND POWERS

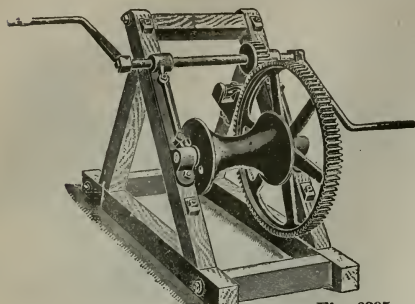


Fig. 6295

Fig. 6295. Style No. 18 1/2 Portable Winch, Single Geared, Concave Drum. Capacity for Four Men

No.	Diameter and Length of Drum inches	Diameter of Gear and Pinion inches	Approx. Speed of Rope per minute in feet	Lift of Two Men Direct Single Line, lbs.	Lift with Double and Triple Blocks, Two Men, lbs.	Price
6295	4 1/2 x 12	24 x 4 1/2	6 3/4	1,600	8,000	\$25.00

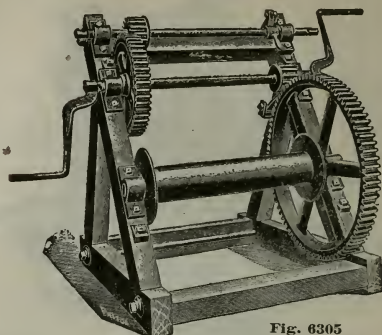


Fig. 6305

Fig. 6305. Style No. 16 Portable Winch, Single Drum, Double Purchase Capacity for Four Men

No.	Diameter and Length of Drum inches	Diameter of Gear and Pinion inches	Approx. Speed of Rope per minute in feet	Lift of Two Men Direct Single Line, lbs.	Lift with Double and Triple Blocks, Two Men, lbs.	Price
6305	6 x 21	28-18-4	1 1/2	7,500	37,500	\$60.00
6307	6 x 30	28-18-4	1 1/2	7,500	37,500	70.00
6308	9 x 16	28-18-4	2 1/4	5,000	25,000	60.00
6309	9 x 21	28-18-4	2 3/4	5,000	25,000	65.00

Note.—Above capacities are for slow speed. Fast speed will lift one-quarter above capacities at four times the speed.

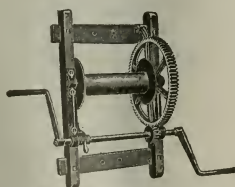


Fig. 6324. Style No. 19, Single Drum, Single Purchase

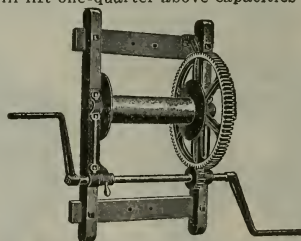


Fig. 6330. Style No. 20, Single Drum, Single Purchase

Capacity For Four Men

No.	Diameter and Length of Drum	Diameter of Gear and Pinion	Speed of Rope on Drum per Minute in feet	Lift of Two Men with Single Block lbs.	Lift with Double and Triple Blocks Two Men lbs.	Price
6324	4 x 16	16 x 4	7 3/4	2,400	6,000	\$22.00
6325	4 x 16	24 x 4	5 1/4	2,700	6,750	23.00
6326	4 x 24	24 x 4	5 1/4	2,700	6,750	25.00
6327	6 x 21	24 x 4	7 3/4	1,800	4,500	25.00

Capacity For Four Men

No.	Diameter and Length of Drum	Diameter of Gear and Pinion	Speed of Rope on Drum per Minute in feet	Lift of Two Men with Single Block lbs.	Lift with Double and Triple Blocks Two Men lbs.	Price
6330	6 x 21	28 x 4	6 3/4	4,000	10,000	\$30.00
6332	6 x 30	28 x 4	6 3/4	4,000	10,000	33.00
6333	9 x 16	28 x 4	10	3,000	7,500	30.00
6334	9 x 21	28 x 4	10	3,000	7,500	32.00

The lift of single line without block is half that shown with single block.

HAND POWERS

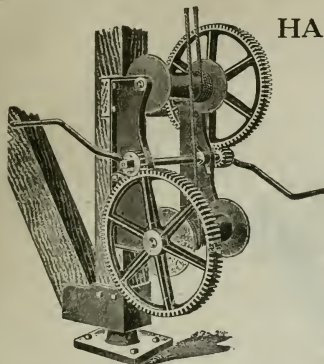


Fig. 6376, Style No. 22, Double Drum, Single Purchase

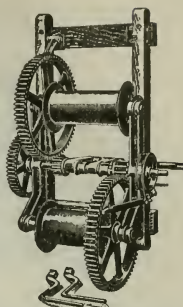


Fig. 6382, Style No. 22 1/2, Double Drum, Double Purchase, with Brake and Boom Safety Attachment.

CAPACITY FOR FOUR MEN

No.	Diameter and length of Drum	Diameter of Gear and Pinion	Speed of Rope per Minute on Drum in Feet.	Lift of Two Men with Single Block, lbs.	Lift with Double and Triple Blocks, lbs.	Price
*6376	6x21	28x4	6 3/4	4,000	10,000	\$50.00
*6377	6x26	28x4	6 3/4	4,000	10,000	53.00
*6378	9x16	28x4	10	3,000	7,500	50.00
*6379	9x21	28x4	10	3,000	7,500	53.00
†6382	9x21 and 9x16	28x4 and 18x5	3	10,000	25,000	100.00
†6383	6x21 and 6x26	28x4 and 18x5	2	15,000	38,500	110.00
†6384	6x30 and 6x26	28x4 and 18x5	2	15,000	38,500	120.00
†6385	9x21 and 9x16	36x5 and 28x4	1 1/2	21,000	52,500	200.00
†6386	9x26 and 9x21	36x5 and 28x4	1 1/2	21,000	52,500	215.00

*Price does not include foot block, derrick timber or rope as shown in cut.

†For Brakes add \$12.00 to list.

†Capacities are for slow speed; fast speed will lift one-quarter the load. The lift of single line without blocks is half of that shown with single block.

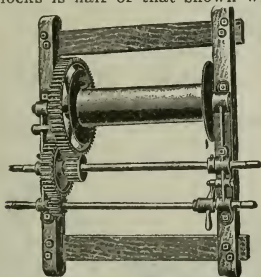


Fig. 6336, Style No. 21 1/2, Single Drum, Double Purchase

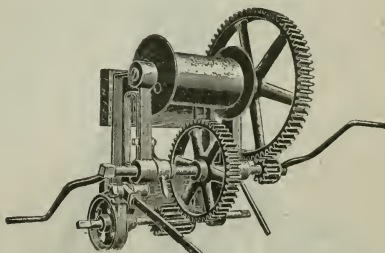


Fig. 6370, Style No. 21, Single Drum, Double Purchase with Brake

CAPACITY FOR TWO MEN

No.	Diameter and Length of Drum	Diameter of Gear and Pinion	Speed of Rope per Minute on Drum in Feet	Lift of Two Men with Single Block, lbs.	Lift with Double and Triple Blocks, lbs.	Price
6336	4x16	16-9-3	2 1/2	2,500	.....	\$42.00
6337	4x24	16-9-3	2 1/2	2,500	.....	45.00
6338	6x21	16-9-3	4	1,800	.....	45.00
6341	6x30	28-18-4	1 1/2	7,500	.....	53.00
6342	9x16	28-18-4	2 1/4	5,000	.....	50.00
6370	6x21	28-18-4	1 1/2	15,000	37,500	60.00
6371	6x26	28-18-4	1 1/2	15,000	37,500	63.00
6372	9x16	28-18-4	2 1/4	10,000	25,000	60.00
6373	9x21	28-18-4	2 1/4	10,000	25,000	63.00

Note.—Above capacities are for slow speed. Fast speed will lift one-quarter the above capacities at three times the speed.

The lift of single line without block is half that shown with single block.

WINCHES AND DERRICKS

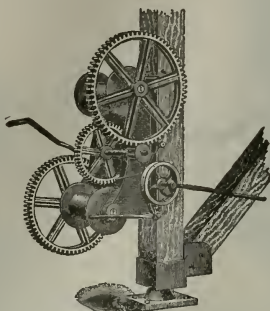


Fig. 6396

Double Drum, Double Purchase with Brake Fitted with Patent Safety Attachment for Boom Drum

CAPACITY FOR FOUR MEN

No.	Diameter and Length of Drum	Diameter of Gear and Pinion	Speed of Rope on Drum per Minute in Feet	Lift of Two Men with Single Block, lbs.	Lift with Double and Triple Blocks lbs.	Price
6393	6x21	28-18-4	1 1/2	15000	37500	\$75.00
6394	6x26	28-18-4	1 1/2	15000	37500	80.00
6395	9x16	28-18-4	2 1/4	10000	25000	75.00
6396	9x21	28-18-4	2 1/4	10000	25000	80.00

Note—Above capacities are for slow speed. Fast speed will lift one-quarter the load. Price does not include foot block, derrick timber, and rope, as shown in cut.

The lift of single line without block is half of that shown with single block.

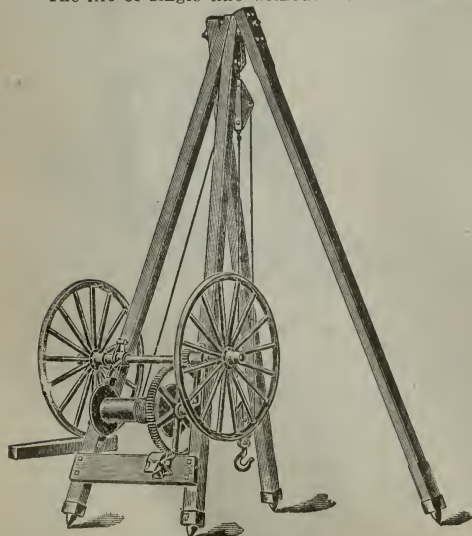


Fig. 6429. Sulky Derrick

SULKY DERRICK

Especially Adapted for Laying Pipe, Etc.

Fitted with Brake, for Lowering

No.	Size Timbers inches	Height feet	Capacity lbs.	Price including Blocks and Rope
6429	4x4	12	3500	\$80.00
6430	4x6	12	10000	100.00

No. 6429 has 2 single blocks.

No. 6430 has 2 double blocks.

Cut shows hand brake; can furnish with foot brake.

GEARINGS FOR HAND POWERS

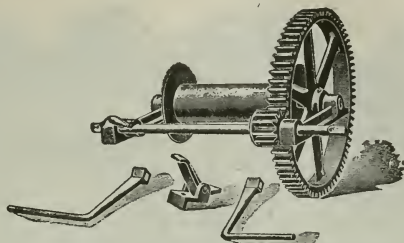


Fig. 6400. Cast Iron Drum, Single Purchase

No.	Face and Diam. of Gear	No. of Teeth	Size of Drum	Price per set
6400	1½ x 14½	10 and 56	5x12	\$15.00
6401	2 x 24	17 and 96	4x16	18.00
6402	2 x 24	17 and 96	4x24	20.00
6403	2 x 24	17 and 96	6x21	20.00
6404	3 x 28	10 and 67	6x21	24.00
6405	3 x 28	10 and 67	6x30	27.00
6406	3 x 28	10 and 67	9x16	24.00

FOR SETTERS DERRICK

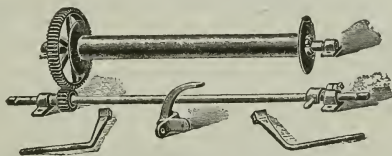


Fig. 6409. With Iron Pipe Drum

No.	Face and Diam. of Gear	No. of Teeth	Size of Drum	Price per set
6409	2x16	17 and 64	4½ x 39	\$30.00
6410	2x24	17 and 96	4½ x 39	32.00
6411	2x24	17 and 96	6½ x 39	36.00
6412	3x28	10 and 67	6½ x 39	40.00

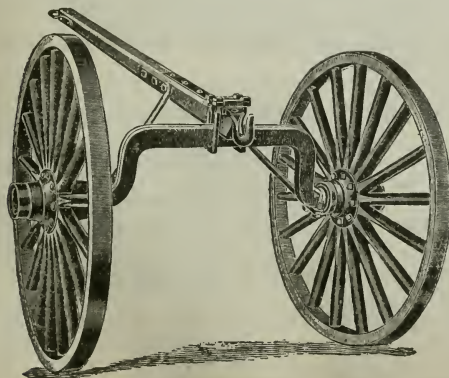


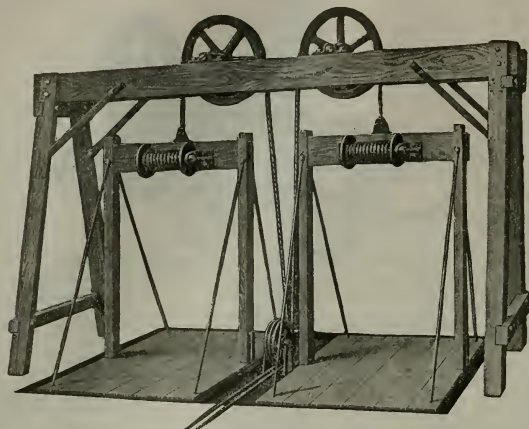
Fig. 7122

PICK-UP CART

Well Adapted for Contractor's Work in Handling
Timber, Pipe, Rails, and Structural Beams

No.	Capacity tons	Diam. of Wheels inches	Width of Tires inches	Size of Axle inches	Price
7122	1	40	2	1½	\$ 54.00
7123	1	48	2	1¾	60.00
7124	2½	54	2½	2	75.00
7125	3½	54	3	2½	85.00
7126	5	60	3	3	110.00

CARPENTER MATERIAL ELEVATOR



The first cost of an elevator cuts but a small figure when divided up on a few contracts. The time occupied in putting up a building is decreased to about one-third, enabling the contractor to erect a greater number of buildings. For rapid handling of building material such as brick and mortar, these elevators are indispensable to the contractor.

The head or top frame which supports the two sheave wheels is strongly bolted and well ironed off to stand the wear and tear on the job.

The two cages are large and well braced with platforms made of sound well seasoned maple, protected with strap iron in parts subject to wear.

The side timbers of the elevator proper are 2 by 6 inch pine, with a 1½ inch square maple strip fastened for the elevator guide. The side timber sections are joined together at their ends with long dowel pins, made of maple, which makes a very rigid joint.

The top sheave wheels are placed on an angle so that the cable down to the lower sheave runs along the side of the maple strip guide, instead of over the top of the guide which avoids the cutting off of the guides at certain floor heights.

This elevator equipment is easily set up and taken apart, and is shipped knocked down.

A blue print is furnished with each shipment to aid workmen in setting up.

SPECIFICATIONS OF THE CARPENTER DOUBLE CAGE MATERIAL ELEVATOR

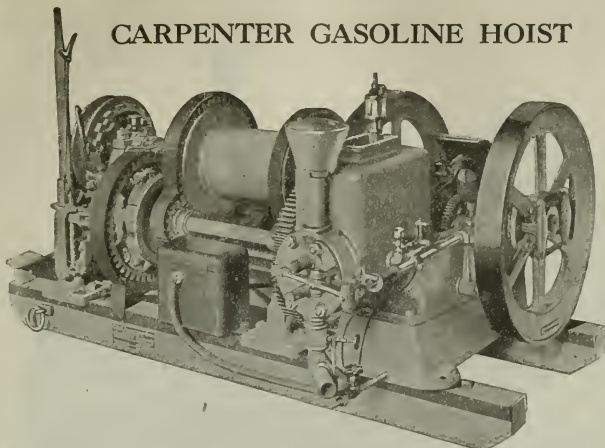
Platforms—maple, reinforced at ends by angle iron. Size of Platforms—3 feet, 8 inches by 6 feet.
Overhead Frame—Norway pine. Diameter of Overhead Sheaves—24 inches.
Guides—1½x1½ inches clear maple. Diameter of Bottom Sheaves—16 inches.
Side Timbers for Guides—2x6 inch Norway pine. Size of Cable Recommended—¾ inch.
Blue Print furnished on application, showing complete installation, in connection with Carpenter Hoist.

THE CARPENTER DOUBLE CAGE MATERIAL ELEVATOR

Carpenter complete 50 foot Material Elevator with two cages, two 24 inch top sheave wheels, double bottom 16-inch sheave wheels, overhead frame work, 200 feet side timber guides, all ready to set up as per blue print furnished.....	\$193.33
Carpenter complete Material Elevator with two cages, two 24-inch top sheave wheels, double bottom 16-inch sheave wheels, overhead frame work, all ready to set up as per blue print furnished (without side timber guides).....	141.33
2—24 inch Sheave Wheels complete with babbitted bearing boxes and shafts which are keyed to the sheaves.....	37.33
2—16 inch Bottom Sheave Wheels mounted on stand.....	20.00
2—Cages complete with cable drums.....	66.67
1—Only 24 inch Sheave Wheel with babbitted bearing boxes and shaft for single cage material elevator.....	20.00
1—Only 16 inch Sheave Wheel mounted on stand for single cage material elevator.....	14.67
1—Only Cage complete with cable drum for single cage material elevator.....	36.00
200 lineal feet of Guides complete (16½c per lineal foot).....	52.00
Overhead Frame Work complete.....	17.33
Horse Operation Attachment.....	32.00

CABLE FURNISHED AT LOWEST MARKET PRICE—SEE INDEX

CARPENTER GASOLINE HOIST



SPECIFICATIONS OF THE CARPENTER GASOLINE ENGINE DRIVEN DOUBLE ACTING BUILDERS' HOIST

End Frame—heavy ribbed cast iron.
Skid—4 inch channel iron, reinforced with 4x6 inch yellow pine.

Size of Clutch Shafts—1½ inch diameter.

Size of Drum Shaft—2 inches diameter.

Drum Holds—500 feet of ½ inch cable.

Maximum Safe Load on Drum Shaft—1500 pounds.

Overall Length of Outfit—6 feet, 6 inches.

Overall Width of Outfit with Engine—30 inches.

Overall Width of Outfit with Motor—36 inches.

Blue Print furnished on application.

Winch-Head can be mounted in place of Hoist Sheave Wheel.

THE CARPENTER GASOLINE ENGINE DRIVEN BUILDERS' HOIST

Carpenter No. 1 gasoline engine driven Builders' Hoist with Carpenter four horsepower, four cycle water hopper cooled gasoline engine mounted.....	\$541.66
Carpenter No. 2 gasoline engine driven Builders' Hoist with Carpenter six horsepower, four cycle water hopper cooled gasoline engine mounted.....	641.66
Hoist without power, ready for mounting your own engine or motor. (Motor or engine pinion furnished).....	308.33
High-Tension friction drive magneto in connection with dry cells and coil.....	40.00
Low-Tension gear-driven "Dixie" magneto (no dry cells or coil).....	37.33

THE CARPENTER MOTOR DRIVEN BUILDERS' HOIST

Same Hoist, Direct Connected to Electric Motor

SPECIFICATIONS

End Frame—heavy ribbed cast iron.
Skid—4 inch channel iron, reinforced with 4x6 inch yellow pine.

Size of Clutch Shafts—1½ inches diameter.

Size of Drum Shaft—2 inches diameter.

Drum Holds—500 feet ½ inch cable.

Maximum Safe Load on Drum Shaft—1500 pounds.

Overall Length of Outfit—6 feet, 6 inches.

Overall Width of Outfit—36 inches.

Winch-Head can be mounted in place of Hoist Sheave Wheel.

When installing an Electric Motor in any of our outfits special attention must be given to the voltage on direct current service and the phase and voltage when mounting either single phase, two phase or three phase motor, with the correct cycle, speed, etc.

Blue Print Furnished on Application

Hoist with alternating current, single phase, two or three phase, or direct current motor, with starting box, wired and installed, complete ready to connect on the job

SINGLE PHASE MOTOR

No. 3 Hoist 5 H. P., 60 cycle, single phase, 110 or 220 volt, 1750 R. P. M.....	\$666.66
No. 3 Hoist 5 H. P., 60 cycle, single phase, 110 or 220 volt, 1165 R. P. M.....	608.33
No. 4 Hoist 7½ H. P., 60 cycle, single phase, 110 or 220 volt, 1750 R. P. M.....	716.66
No. 4 Hoist 7½ H. P., 60 cycle, single phase, 110 or 220 volt, 1165 R. P. M.....	806.66
No. 5 Hoist 10 H. P., 60 cycle, single phase, 110 or 220 volt, 1750 R. P. M.....	841.66
No. 5 Hoist 10 H. P., 60 cycle, single phase, 110 or 220 volt, 1165 R. P. M.....	850.00
No. 6 Hoist 15 H. P., 60 cycle, single phase, 110 or 220 volt, 1750 R. P. M.....	941.66
No. 6 Hoist 15 H. P., 60 cycle, single phase, 110 or 220 volt, 1165 R. P. M.....	1033.33

TWO OR THREE PHASE MOTOR

No. 3 Hoist 5 H. P., 60 cycle, 2 or 3 phase, 220 or 440 volt, 1730 R. P. M.....	\$566.66
No. 3 Hoist 5 H. P., 60 cycle, 2 or 3 phase, 220 or 440 volt, 1140 R. P. M.....	605.33
No. 4 Hoist 7½ H. P., 60 cycle, 2 or 3 phase, 220 or 440 volt, 1730 R. P. M.....	641.67
No. 4 Hoist 7½ H. P., 60 cycle, 2 or 3 phase, 220 or 440 volt, 1140 R. P. M.....	683.33
No. 5 Hoist 10 H. P., 60 cycle, 2 or 3 phase, 220 or 440 volt, 1730 R. P. M.....	700.00
No. 5 Hoist 10 H. P., 60 cycle, 2 or 3 phase, 220 or 440 volt, 1140 R. P. M.....	775.00
No. 6 Hoist 15 H. P., 60 cycle, 2 or 3 phase, 220 or 440 volt, 1730 R. P. M.....	766.66
No. 6 Hoist 15 H. P., 60 cycle, 2 or 3 phase, 220 or 440 volt, 1140 R. P. M.....	850.00

DIRECT CURRENT MOTOR

No. 3 Hoist 5 H. P., direct current, 110 or 220 volt, 1720 R. P. M.....	\$641.67
No. 3 Hoist 5 H. P., direct current, 110 or 220 volt, 1200 R. P. M.....	683.33
No. 4 Hoist 7½ H. P., direct current, 110 or 220 volt, 1720 R. P. M.....	675.00
No. 4 Hoist 7½ H. P., direct current, 110 or 220 volt, 1200 R. P. M.....	700.00
No. 5 Hoist 10 H. P., direct current, 110 or 220 volt, 1720 R. P. M.....	608.33
No. 5 Hoist 10 H. P., direct current, 110 or 220 volt, 1200 R. P. M.....	750.00
No. 6 Hoist 15 H. P., direct current, 110 or 220 volt, 1720 R. P. M.....	783.33
No. 6 Hoist 15 H. P., direct current, 110 or 220 volt, 1200 R. P. M.....	850.00

CARPENTER No. 4 CONTRACTORS' AND BUILDERS' HOIST

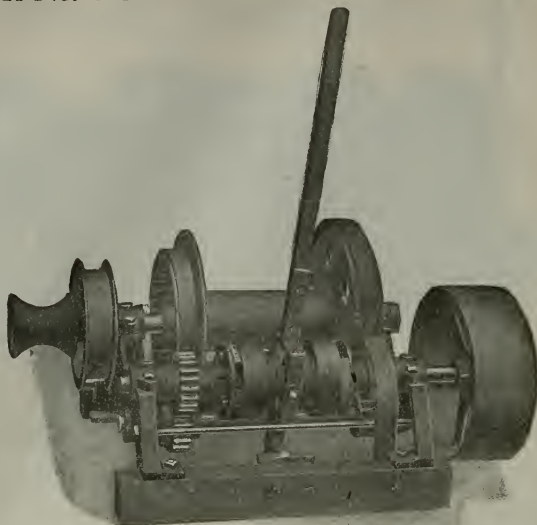


Fig. 2441

Our No. 4 Single Drum **Reversible** Hoist shown here, is a time, labor and money saver. It is especially adapted to contractors' and builders' requirements, but may be used for a large variety of other purposes where the load is not over 1,000 to 1,200 lbs., with single line, on the direct lift.

The Drum, the Sheave and the Winch Head are reversible and may be used independently one of the other. The Winch Head is for "Snubbing" or quick, short work and general utility. The Sheave is for double platform elevator work and the Drum for heavy single line lifting, or for use with block and tackle.

Forward and reverse motion is obtained by a movement of the operating lever which engages or disengages the friction clutches.

A powerful Band Brake is provided which is controlled by a tread lever in convenient reach of the operator.

A Safety Ratchet and Pawl are provided for holding the load at a desired height, and guards are provided for all gears.

The Hoist may be driven by belt from any convenient power or may be mounted on a base or truck and direct connected by gearing or sprocket and chain to a gasoline engine or electric motor. Gear or sprocket will be furnished in place of drive pulley when desired.

It occupies but little space, and being comparatively light weight, it is easily moved and can be used in cramped quarters.

Specifications—Drum, 5 inches diameter, 13 inches between flanges, and will hold 500 feet of $\frac{1}{2}$ inch wire cable. Sheave, 10 inches diameter. Capacity to lift 1000 lbs. 100 feet per minute with single line direct lift. Floor space, 27x42 inches. Weight, 475 lbs. Power recommended, 5 H. P. or more. Drive pulley, 16x5 inches. Speed, 360 R. P. M.

In addition to the Style No. 4 shown above, we can supply three other styles. Special descriptive circular will be sent on request.

Style No. 1, Single Drum Hoist. List.....	\$60.00
Style No. 2, "Handy Man" Hay Hoist. List.....	80.00
Style No. 3, Double Drum Hoist. List.....	110.00
Style No. 4, Described above. List.....	80.00

FOR OTHER STYLES OF HOISTS, SEE INDEX

DOUBLE FRICTION-DRUM BELT HOIST

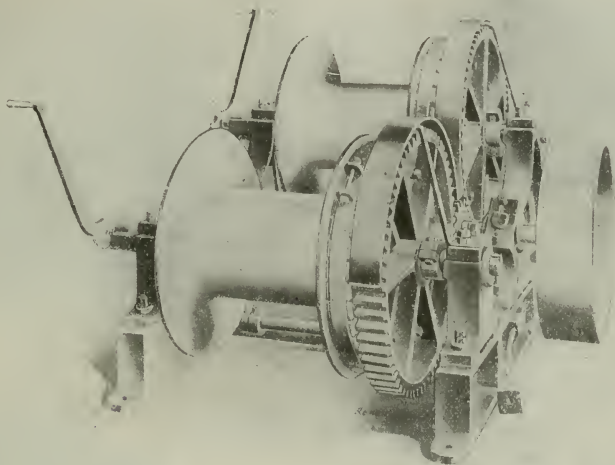


FIG. 122

Above we illustrate our Double Friction Drum Belt Hoist. It has two drums instead of one; both drums are mounted on a substantial bed plate, the one drum being lower than the other, permitting the necessary play for the ropes.

The Drums are the double V friction type, bronze bushed, and equipped with ratchets, pawls and foot brakes, and may be operated independently or together. The driving pulley may be replaced by a gear or sprocket, if desirable to connect directly to a gas or oil engine or drive from a motor.

The gears are cut, and the pinion is steel.

We can also furnish this Hoist in single drum.

SPECIFICATIONS

	No.	200	201	202	203	204	205
Diameter of Drums, inches	12	16	14	20	14	24	
Diameter of Flanges, inches	22	22	29	29	36	36	
Length of Drums, inches	14	14	16	16	20	20	
Diameter and Face of Pulley	24x6	24x6	24x8 ½	24x8 ½	30x8 ½	30x8 ½	
Floor-space Required, inches	52x59	52x59	56x66	56x66	74x74	74x74	
Weight Hoisted, Single Rope	2,000	2,000	3,000	3,000	5,000	5,000	
Approximate Shipping Weight, pounds	2,000	2,100	2,950	3,150	4,300	4,450	
List	\$235.00	\$335.00	\$440.00	\$440.00	\$545.00	\$545.00	

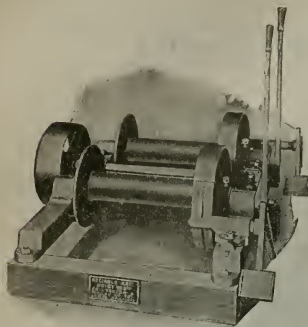


Fig. 202 1/2

Pulley—Furnished 14 inch diameter by 4 inch face.
Speed—Pulley running 400 R. P. M. will hoist 75 feet per minute on first coil of cable wound on drum.

Operation—Each drum has the hand and foot levers shown in the cut. The hand lever when pulled forward engages frictions for hoisting, and pulled back applies the brake. The foot brake can be used in connection with the hand lever, or independent of it.

SINGLE DRUM REVERSIBLE

Type 204

Our Hoist No. 204 Single Drum Reversible has a capacity of 2000 pounds, and is designed to meet the demand of contractors and builders, or in fact anywhere where pulling, hauling or lifting both ways is desired, hauling cars back and forth.

SPECIFICATIONS

Capacity—2000 pounds.

Drums—Ample wire rope capacity, 4 inch diameter, 17 inches between flanges. Flanges 15 inch diameter. Hole in each end of drum for fastening cable.

Pulley—Furnished 16 inch diameter by 5 inch face. This is regular size.

Speed—Pulley running 338 R. P. M. will hoist 75 feet per minute on first coil of cable wound on drum.

Operation—Hand lever when brought forward raises the load and if pulled back reverses the load.

Brake Lever—Can be set and locked and the load held indefinitely.

Adjustment—Is provided to take up all wear on brake, bearings and frictions.

Weight—On short skids, 700 pounds.

Floor Space—34 inches by 42 inches.

PORTABLE FRICTION HOISTS DOUBLE DRUM

Type 202 1/2

Hoist No. 202 1/2 Double Drum of 1000 pounds capacity, is especially designed to hoist in two places, or in different parts of the building, raising material with one machine.

Each drum can be operated separately from the other. When the hand levers are central, your hook or load will drop. If loaded you can drop it as slowly or quickly as desired by using hand or foot brake or both. Or if hauling wagons, cars, etc., up inclines, by holding the lever central the cable can be quickly and easily pulled back.

This machine is of the same construction and design as the No. 202 Single Drum, but needs only one man and one engine to drive it, and does the work of two hoists. It enables you to keep more than one gang or floor in building under construction supplied with material, and permits work to progress with dispatch.

SPECIFICATIONS

Capacity—1000 pounds.

Drums—Ample wire rope capacity, 3 inch diameter and 18 inches between flanges. Flanges 12 inch diameter. Oil cups and hole for fastening wire rope furnished.

Adjustment—Is provided to take up all wear on brakes, friction or bearings.

Weight—On short skids, 650 pounds.

Floor Space—32 inches by 52 1/2 inches.

Price—On short skids.....\$150.00

We recommend 4 H. P., or larger engine, or motor for this Hoist, depending on speed desired. See index.

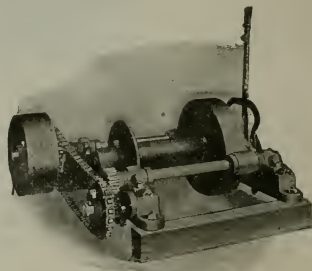


Fig. 204

Price.....\$250.00

We recommend 6 H. P., or larger engine or motor for this Hoist, depending upon the speed desired.

DOUBLE PLATFORM REVERSIBLE HOIST

Type 205

Our Hoist No. 205 Double Platform Reversible, has a capacity of 2000 pounds, and is designed for contractors and builders. It has a long drum with a flange in the center and is used in connection with two platform elevators, one fastened to each of the drums so that when one elevator is up the other is down and in this way balance each other. This machine is a great time and labor saver for hauling up building material, and can also be used for various other purposes.

SPECIFICATIONS

Capacity—2000 pounds.

Drums—Ample cable capacity, 4 inch diameter, 12 inches between friction and center flange, and 12 inches between center flange and end flange. Flanges 15 inch diameter. Hole in each drum for fastening cable.

Pulley—16 inch diameter by 5 inch face. This is regular size furnished.

Adjustment—Is provided to take up all wear on brake, bearings, chain and frictions.

Weight—On short skids, 825 pounds.

Floor Space—43 inches by 42 inches.

Price—On short skids.....\$300.00

We recommend 6 H. P., or larger engine or motor for this Hoist on speed desired. See index.

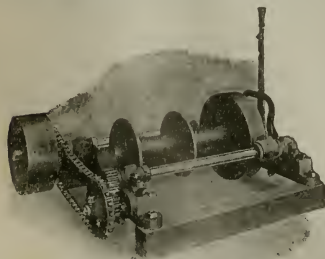


Fig. 205, Left Hand Side View

Speed of Pulley—Running 338 R. P. M. will hoist 75 feet per minute on first coil wound around the drum.

Operation—Hand lever when brought forward raises the load and if pulled back reverses the load. Brake lever can be set and locked and the load held indefinitely.

PORTABLE FRICTION HOISTS

HEAVY SINGLE DRUM

Type 201

This Hoist has a capacity of 750 pounds. It is very simple and compact and can be mounted on portable gasoline engine outfits of $1\frac{1}{2}$ to $2\frac{1}{2}$ H. P. A very useful hoist for all around light lifting.

SPECIFICATIONS

Capacity—750 pounds.

Drum—Ample cable capacity, 3 inch diameter and 12 inch space between flanges. Flanges 10 inch diameter. Oil cups and hole for fastening cable.

Pulley—Furnished 10 inch by $3\frac{1}{2}$ inch face.

Speed—Pulley running 400 R. P. M. will hoist 75 feet per minute on first coil of cable wound on drum.

Operation—Entirely by one lever, which, brought forward, engages frictions for hoisting, and pulled back applies the brake. No foot lever is furnished as it is not needed.

Adjustment—Is provided for taking up all wear on brake, bearings and friction.

We recommend a 2 H. P. Engine for this Hoist.

See Index

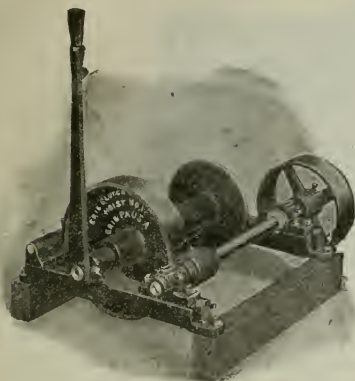


Fig. 201

Weight—On short skids, 200 pounds.

Floor Space—24 inches by 24 inches.

Price—On short skids\$64.00

SINGLE DRUM

Type 202

Hoist No. 202 is specially adapted to meet the requirements for a 1000 pound Hoist for general contracting and building use. The demand for this size has been very heavy and proves the popularity of this machine.

We sell a great many of this size not only to contractors and builders, but also to excavators, warehouses, dairies, ice houses, well diggers, etc., and for use in hauling sand, concrete, lumber, etc., up inclines. They are extensively used for raising building material.

SPECIFICATIONS

Capacity—1000 pounds.

Drum—Large cable capacity, 18 inch space between flanges. Flanges 12 inch diameter. Oil cups furnished and hole for fastening cable.

Pulley—Furnished 14 inch diameter by 4 inch face.

Speed—Pulley running 400 R. P. M. will hoist 75 feet per minute on first coil of rope wound on drum.

Operation—By one lever, which, when pulled forward, engages frictions for hoisting, and pulled back applies the brake. A foot brake lever is also furnished, which can be used separate or in connection with the hand lever.

Adjustment—Is provided to take up wear on friction, brake and bearings.

Floor Space—On short skids, 32 inches by 34 inches.

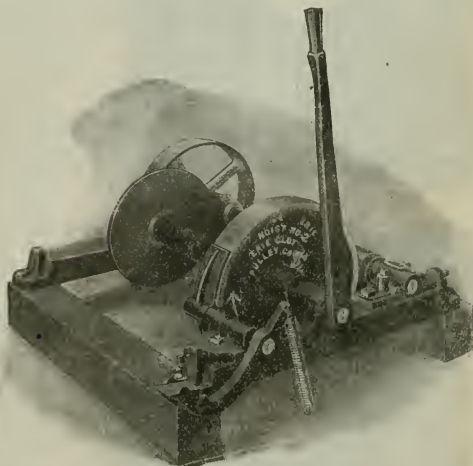


Fig. 202 Right Hand Side View

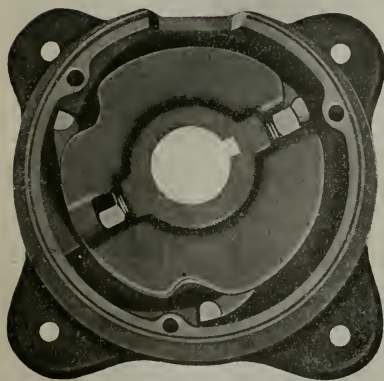
Weight—On short skids, 350 pounds. On 32 inch by 84 inch frame, 425 pounds.

Price—On short skids\$80.00
On 7 foot frame 90.00

We recommend a 2 H. P. or 4 H. P. Engine for this Hoist, depending on the speed desired.

See Index

CARPENTER SAFETY CAISSON DEVICE



Interior View, Assembled



Ready for Use

The Carpenter Safety Caisson Device positively prevents caisson shaft and sheave from turning backward, even if the drive cable should break. There is no chance of an accident, or dropping of the hoist buckets.

Absolutely noiseless. This device covers in every respect the features for safety which are strictly enforced by the state factory inspection of Illinois. A number of tests have been made with this device on actual construction work, and in every instance it has proved itself efficient beyond our claims. It is highly recommended and endorsed by the state factory inspection of the State of Illinois.

It consists only of three parts—the shell or case which bolts to the inside of the cross piece of the tripod, the pawls or counter-balanced dogs which are a part of the block and are key-seated to the shaft on which the drive sheave and nigger head are placed, and the dust cover.

The method of installation is to bore four holes to the cross piece on the tripod and bolt the case to same; the block casting is then key-seated to the shaft; the cover serves as protection for the mechanism. After the first installation, these need never be removed from the shaft. When the engine is running there are no parts touching—no friction of any kind. There is, therefore, absolutely no need of lubrication of any kind. The first expense is the last expense, there being no wearing parts, and no parts to lose. It is absolutely impossible to drop the load with this outfit, due to the fact that the three counter-weighted pawls must come up even before the shaft stops turning.

These outfits are used at the present time by practically all of the large caisson contractors in Chicago as well as throughout the United States.

A set consists of one cover, one case, one block with dogs, one key for fastening to shaft.

Price per set, complete.....\$15.00

WE CARRY THE MOST COMPLETE STOCK OF CAISSON EQUIPMENT IN THE WEST

CAISSON ACCESSORIES

CARPENTER FOUNDATION WINCH HEADS

Principally used in sinking shafts or caisson for heavy foundations.

Each outfit comprises a turned winch head, 11 inches long, shaft and wire rope sheave. No timbers.

Each, complete.....	\$22.00
Extra shafts, each, 1½x2'0" ..	3.60
Extra sheaves, each 24" diam.	11.70
Extra drums, each 8" diam. . .	9.00

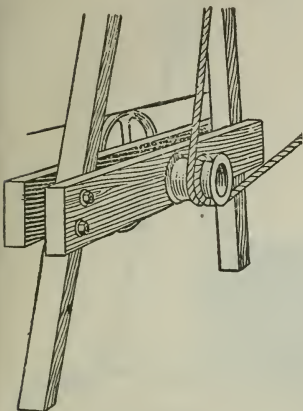


Fig. 205A



Fig. 205B

CAISSON BUCKETS

Heavy galvanized iron with three iron bands. 25½ inches high; 20 inches diameter at top; 17½ inches diameter at bottom; capacity 3 cubic feet. Fitted with a lock, as shown in illustration, to keep base in upright position.

Riveted and soldered, for water.....	each, \$14.50
Riveted only, for clay.....	each, 14.00

CAISSON BUCKET HOOKS

Made of heavy wrought rod. As shown in Fig. 205B.

Price, each.....	\$0.70
------------------	--------



Fig. 205C

CARPENTER HAND WINDLASS

HAND WINDLASSES

Used where work is not large enough to install power. Iron forging is in one piece going all the way through the wood drum. Drum is held in place by two clamps, one at each end. Boxes for each end are furnished without additional cost.

Price complete, each.....	\$25.00
Extra boxes, per pair.....	2.00

OUR STOCK OF CAISSON EQUIPMENT IS THE MOST COMPLETE IN THE U. S.

EXCAVATING AND HOISTING EQUIPMENT

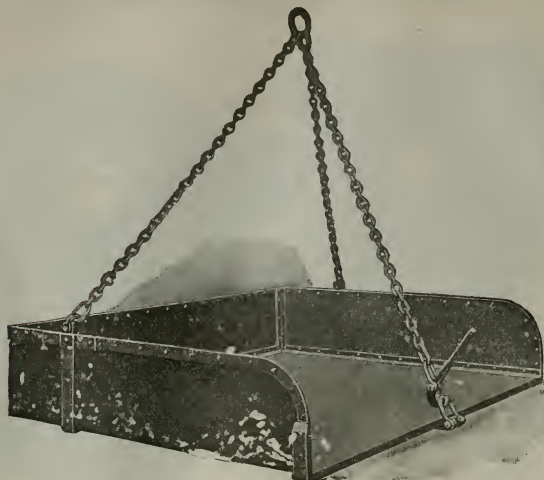


Fig. 200

STEEL DERRICK SKIPS

For handling stone, brick, dirt, etc. Made of extra heavy gauge steel, closely riveted and strongly braced. The corners are reinforced with special heavy steel angles. Extra bands of steel are fitted all around the wearing edges to insure additional life and service to the skip.

Capacity cu. ft	Length Across	Width Front to Back	Depth inches	Thickness of Plate inches	Size of Chain inches	Weight in Pounds	Price
14	3' 11 1/2"	4' 6"	11	3/16	3/8	490	\$60.00
21	4' 6"	5' 1"	12	3/16	7/16	595	72.00
27	4' 11"	5' 6"	13	1/4	1/2	830	100.00
36	5' 6"	6' 3"	14	5/16	5/8	1240	150.00
41	5' 8"	6' 5"	15	5/16	5/8	1390	168.00
54	6' 0"	6' 8"	16	5/16	3/4	1830	220.00

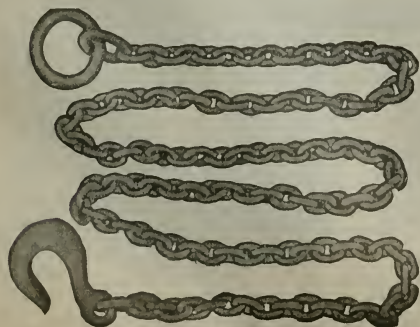


Fig. 64

CHAIN SLINGS

We specialize in Chain Slings of all kinds, and for every purpose, from the small 1/4 inch size, equipped with bunk hooks, to the large 2 inch diameter special steel twin chains, used for hoisting steel in the construction of modern skyscrapers. We are equipped to make prompt delivery. We have a large force of mechanics who can make any special chain quickly. No order is too small to receive our best attention, nor too large to tax our capacity.

Send Us Your Specifications

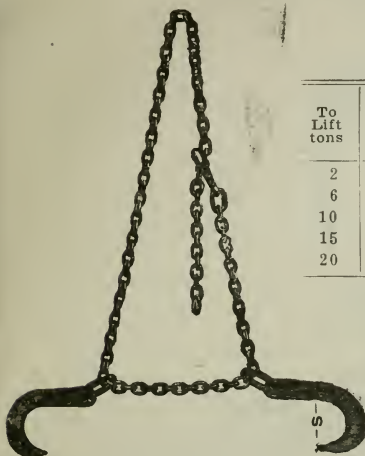
DERRICK FITTINGS

STONE GRAB HOOKS

To Lift tons	Size of Steel	Distance "S" inches	Length of Chain feet	Size of Chain inches	Price of 2 Hooks without Chain	Price of Hooks and Chain Complete
2	$\frac{1}{2}$ x $2\frac{1}{2}$	7	10	$\frac{1}{2}$	\$10.00	\$15.50
6	1 x 3	8	14	$\frac{5}{8}$	16.00	25.00
10	1 x 4	10	16	$\frac{3}{4}$	21.00	36.00
15	2 x 4	10	18	$\frac{7}{8}$	29.50	49.00
20	2 x 5	11	20	1	36.00	61.00

The steel in these hooks is of a special grade and is tough and uniform.

The chain is the finest grade of B. B. Crane Chain, with short links.



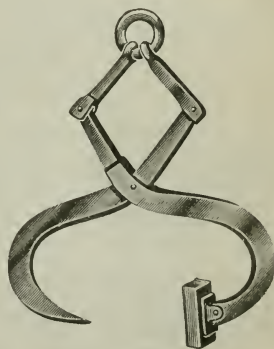
For Chain and Fittings, see Index



LEWISES



BEAM CLAMPS



STONE TONGS

Capacity tons	Price Each
2	\$ 5.00
3	6.00
5	7.50
7	11.00
10	16.00

Capacity tons	Maximum Size of I Beam inches	Price Each
1	10	\$10.00
2	15	12.00
3	20	15.00

Capacity lbs.	Price Each
1500	\$ 8.00
2500	10.00
4000	12.00
6000	16.00

We Can Furnish Heavier Lewises, Clamps and Stone Tongs to order. Prices on application

HAND POWER GUY DERRICK No. 32

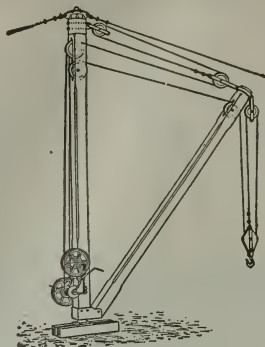


Fig. 32

PARTS OF LINES

10 inch Mast.....	topping, 4	load, 3
12 inch Mast.....	" 5	" 4
14 inch Mast.....	" 7	" 5
16 inch Mast.....	" 7	" 6

PRICE LIST OF FITTINGS

Without Hand Power, Timber and Rope

Description of Parts	10 inch Mast Fittings No. 810		12 inch Mast Fittings No. 811		14 inch Mast Fittings No. 812		16 inch Mast Fittings No. 813	
	No.	Price	No.	Price	No.	Price	No.	Price
1 Standard Foot Block.....	917	\$11.50	919	\$18.00	921	\$24.00	924	\$45.00
1 Plain Step.....	954	9.60	954	9.60	955	19.00	955	19.00
1 Mast Top Round.....	995	15.00	996	21.00	997	27.00	998	36.00
1 B. B. Sheave for Top of Mast.....	2108	4.20	2108	4.20	2138	5.40	2170	6.80
1 B. B. Sheave for Top of Mast.....	2072	3.75	2072	3.75	2108	4.55	2138	5.40
2 Pins on Sheaves.....	1208	2.30	1208	2.60	1209	3.80	1209	4.10
1 Guy Cap.....	1119	14.00	1120	25.00	1121	26.00	1122	35.00
Total for Mast Fittings.....		\$60.35		\$84.15		\$109.75		\$151.30
1 Flat Boom Band.....	1067	\$10.50	1069	\$13.50	1070	\$17.50	1071	\$23.50
1 B. B. Sheave for Point of Boom.....	2108	4.20	2108	4.20	2138	5.40	2138	5.40
1 Pin for Sheave.....	1208	1.00	1208	1.15	1209	1.70	1209	1.90
Total for Boom Fittings.....		\$15.70		\$18.85		\$24.60		\$30.80
1 Swivel Hook Hoisting Block.....		\$18.25		\$26.50		\$40.00		\$89.00
1 Strap Block for Hoisting Line.....	1386	8.40	1392	10.00	1400	18.00	1409	20.50
1 Strap Block for Boom.....	1388	9.50	1397	16.00	1410	31.25	1420	39.00
1 Strap Block for Boom.....	1489	14.50	1397	16.00	1410	31.25	1420	39.00
Total for Blocks.....		\$50.65		\$68.50		\$120.50		\$187.50
Total for Complete Set of Fittings.....		\$126.70		\$171.50		\$254.85		\$369.60

Capacities of Fittings. Boom Horizontal

Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given				Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given			
	Mast	Boom	Mast	Boom		Mast	Boom	Mast	Boom
10 in. Mast Fittings. 8 in. Boom Fittings					14 in. Mast Fittings. 12 in. Boom Fittings				
6	10x10x44	8x8x36	12x12x52	10x10x46	16	14x14x36	12x12x30	16x16x64	14x14x56
12 in. Mast Fittings. 10 in. Boom Fittings					16 in. Mast Fittings. 14 in. Boom Fittings				
10	12x12x36	10x10x30	14x14x60	12x12x52	24	16x16x36	14x14x30	18x18x62	16x16x54

FOR BOLTS, NAILS, WIRE ROPE, ETC., SEE INDEX

GUY DERRICK No. 36

Operated by Double Drum, Steam or Horse Power

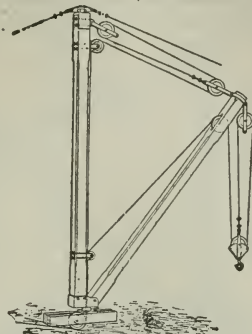


Fig. 36

PARTS OF LINES

10 inch Mast.....	topping, 4	load, 3
12 inch Mast.....	" 5	" 4
14 inch Mast.....	" 5	" 4
16 inch Mast.....	" 6	" 5

We show here another form of rigging; three lines being used. When we use the American foot block, as in this rig, the upper pivot is the center of the mast; the mast must be out of plumb. This does not affect the swinging of the Derrick as the pivots are plumb.

PRICE LIST OF FITTINGS

Without Timber and Rope

Description of Parts	10 inch Mast Fittings No. 820		12 inch Mast Fittings No. 821		14 inch Mast Fittings No. 822		16 inch Mast Fittings No. 823	
	No.	Price	No.	Price	No.	Price	No.	Price
1 Offset Foot Block.....	932	\$12.00	932	\$20.00	935	\$34.00	936	\$45.00
1 Step with Two Sheaves.....	976	21.00	976	21.00	977	30.00	977	30.00
1 Square Mast Top.....	1002	15.00	1003	21.00	1004	27.00	1005	36.00
1 Bracket with one Sheave.....	1361	9.70	1361	9.70	1367	12.15	1367	12.15
1 Bracket with Two Sheaves.....	1362	13.90	1362	13.90	1368	17.50	1368	17.50
1 Guy Cap.....	1119	14.00	1120	25.00	1121	26.00	1122	35.00
Total for Mast Fittings.....		\$85.60		\$110.60		\$146.65		\$175.65
1 Flat Boom Band.....	1067	\$10.50	1069	\$13.50	1070	\$17.50	1071	\$23.50
1 B. B. Sheave for Boom.....	2108	4.20	2108	4.20	2138	5.40	2138	5.40
1 Pin for Sheave.....	1208	1.00	1208	1.15	1209	1.70	1209	1.90
Total for Boom Fittings.....		\$15.70		\$18.85		\$24.60		\$30.80
1 Swivel Hook Hoisting Block.....		\$18.25		\$26.70		\$40.00		\$70.00
1 Strap Block for Hoisting Line.....	1386	8.40	1392	10.00	1399	12.00	1409	20.50
1 Strap Block for Boom.....	1388	9.50	1397	16.00	1409	20.50	1419	28.00
1 Strap Block for Boom.....	1389	14.50	1397	16.00	1409	20.50	1420	39.00
Total for Blocks.....		\$50.65		\$68.75		\$93.00		\$157.50
Total for Complete Set of Fittings		\$151.95		\$198.20		\$264.25		\$363.95

Capacities of Fittings. Boom Horizontal

Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given				Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given			
	Mast	Boom	Mast	Boom		Mast	Boom	Mast	Boom
10 in. Mast Fittings.	8 in. Boom Fittings				14 in. Mast Fittings.	12 in. Boom Fittings			
6	10x10x44	8x8x36	12x12x52	10x10x46	16	14x14x36	12x12x30	16x16x64	14x14x56
12 in. Mast Fittings	10 in. Boom Fittings				16 in. Mast Fittings.	14 in. Boom Fittings			
10	12x12x36	10x10x30	14x14x60	12x12x52	24	16x16x36	14x14x30	18x18x62	16x16x54

FOR WIRE ROPE, BOLTS AND WASHERS, SEE INDEX

GUY DERRICK No. 37

WITH BULL WHEEL

For General Hoisting. Operated by Double Drum Hoist and Swinger

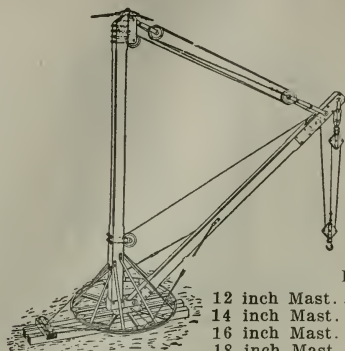


Fig. 37

PARTS OF LINES

12 inch Mast.....	topping,	5	load,	4
14 inch Mast.....	"	5	"	4
16 inch Mast.....	"	6	"	5
18 inch Mast.....	"	7	"	6

PRICE LIST OF FITTINGS

Without Timber and Rope

Description of Parts	12 inch Mast Fittings No. 825		14 inch Mast Fittings No. 826		16 inch Mast Fittings No. 827		18 inch Mast Fittings No. 828	
	No.	Price	No.	Price	No.	Price	No.	Price
1 Offset Foot Block.....	933	\$20.00	935	\$34.00	936	\$45.00	937	\$60.00
1 Step with two Sheaves.....	976	21.00	977	30.00	977	30.00	978	38.00
1 Steel Mast Top with Strap Block and Guy Cap.....	1031	94.00	1032	106.00	1033	130.00	1034	165.00
1 Bracket with two Sheaves.....	1362	13.90	1368	17.50	1368	17.50	1371	23.25
Total for Mast Fittings.....		\$148.90		\$187.50		\$222.50		\$286.25
1 Steel Boom Point with Load and Boom Balls.....	1092	\$66.00	1093	\$81.00	1094	\$115.00	1095	\$140.00
2 Boom Heel Plates.....	1186	7.00	1187	7.50	1188	10.00	1189	13.50
Total for Boom Fittings.....		\$73.00		\$88.50		\$125.00		\$153.50
1 Swivel Hook Hoisting Block.....		\$26.75		\$40.00		\$70.00		\$103.00
1 Shackle Block.....		16.25		25.00		38.25		49.00
Total for Load Blocks.....		\$43.00		\$65.00		\$108.25		\$152.00
1 Steel Bull Wheel.....	903	\$130.00	904	\$175.00	905	\$300.00	906	\$340.00
2 Fair Leader Sheaves.....	1293	14.00	1294	18.00	1294	18.00	1295	22.00
Total for Bull Wheel.....		\$144.00		\$193.00		\$318.00		\$362.00
Total for Complete Set of Fittings		\$408.90		\$534.00		\$773.75		\$953.75

Capacities of Fittings. Boom Horizontal

Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given			
	Mast	Boom	Mast	Boom
12 in. Mast Fittings. 10 in. Boom Fittings				
10	12x12x36	10x10x30	14x14x60	12x12x52
14 in. Mast Fittings. 12 in. Boom Fittings				
16	14x14x36	12x12x30	16x16x64	14x14x56

Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given			
	Mast	Boom	Mast	Boom
16 in. Mast Fittings. 14 in. Boom Fittings				
24	16x16x36	14x14x30	18x18x62	16x16x54
18 in. Mast Fittings. 16 in. Boom Fittings				
30	18x18x44	16x16x38	20x20x68	18x18x60

GUY DERRICK No. 38

With Bull Wheel and Rooster. Rigged for General Hoisting
Operated by Double Drum Hoist and Swinger

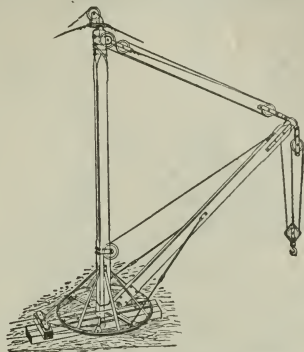


Fig. 38

PARTS OF LINES

12 inch Mast.....	topping, 5	load, 4
14 inch Mast.....	" 5	" 4
16 inch Mast.....	" 6	" 5
18 inch Mast.....	" 7	" 6

PRICE LIST OF FITTINGS
Without Timber and Rope

Description of Parts	12 inch Mast Fittings No. 830		14 inch Mast Fittings No. 831		16 inch Mast Fittings No. 832		18 inch Mast Fittings No. 833	
	No.	Price	No.	Price	No.	Price	No.	Price
1 Standard Foot Block.....	919	\$18.00	921	\$24.00	924	\$45.00	925	\$60.00
1 Step with One Sheave.....	971	17.00	972	25.00	972	25.00	973	33.00
1 Round Mast Top with Rooster Guy	1050	109.00	1051	123.00	1052	164.00	1053	197.00
Cap and Strap Block.....	1361	9.70	1367	12.15	1367	12.15	1370	16.00
1 Bracket with one Sheave.....								
Total for Mast Fittings.....		\$153.70		\$184.15		\$246.15		\$306.00
1 Boom Band with Sheave Pin and								
Extension.....	1080	\$23.50	1081	\$28.00	1082	\$35.00	1083	\$42.00
1 E. B. Sheave.....	2108	4.20	2138	5.40	2138	5.40	2170	7.20
2 Boom Heel Plates.....	1186	7.00	1187	7.50	1188	10.00	1189	13.50
Total for Boom Fittings.....		\$34.70		\$40.90		\$50.40		\$62.70
1 Swivel Hook Hoisting Block.....		\$26.75		\$40.00		\$70.00		\$103.00
1 Strap Block for Hoisting Line.....	1392	10.00	1399	12.00	1409	20.50	1453	38.75
1 Strap Block for Boom.....	1397	16.00	1409	20.50	1420	39.00	1462	70.00
Total for Blocks.....		\$52.75		\$72.50		\$129.50		\$211.75
1 Steel Bull Wheel.....	903	\$130.00	904	\$175.00	905	\$300.00	906	\$340.00
2 Fair Leader Sheaves.....	1293	14.00	1294	18.00	1294	18.00	1295	22.00
Total for Bull Wheel.....		\$144.00		\$193.00		\$318.00		\$362.00
Total for Complete Set of Fittings..		\$385.15		\$490.55		\$744.05		\$942.45

Capacities of Fittings. Boom Horizontal

Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given				Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given			
	Mast	Boom	Mast	Boom		Mast	Boom	Mast	Boom
12 in. Mast Fittings. 10 in. Boom Fittings					16 in. Mast Fittings. 14 in. Boom Fittings				
10	12x12x36	10x10x30	14x14x60	12x12x52	24	16x16x36	14x14x30	18x18x62	16x16x54
14 in. Mast Fittings. 12 in. Boom Fittings					18 in. Mast Fittings. 16 in. Boom Fittings				
16	14x14x36	12x12x30	16x16x64	14x14x56	30	18x18x44	16x16x38	20x20x68	18x18x60

FOR WIRE ROPE, NAILS, CLIPS, ETC., SEE INDEX

STIFF LEGGED, HAND POWER DERRICK No. 30

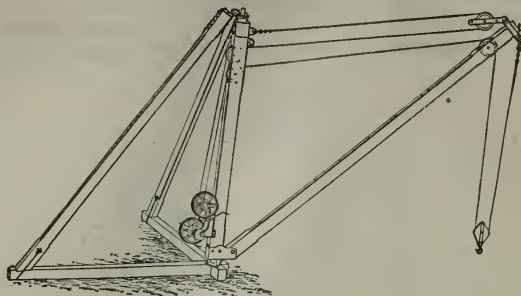


Fig. 30

PARTS OF LINES

10 inch Mast.....	topping, 4	load, 2	14 inch Mast.....	topping, 7	load, 4
12 inch Mast.....	" 5	" 3	16 inch Mast.....	" 7	" 5

Illustration shows stiff leg derrick operated by hand power. Where speed is not a factor, this style of derrick will give satisfaction.

PRICE LIST OF FITTINGS

Without Hand Power, Timber and Rope

Description of Parts	10 inch Mast Fittings No. 800		12 inch Mast Fittings No. 801		14 inch Mast Fittings No. 802		16 inch Mast Fittings No. 803	
	No.	Price	No.	Price	No.	Price	No.	Price
1 Standard Foot Block.....	917	\$11.50	919	\$18.00	921	\$24.00	924	\$45.00
1 Plain Step	954	9.60	954	9.60	955	19.00	955	19.00
1 Mast Top, square.....	1002	15.00	1003	21.00	1004	27.00	1005	36.00
1 Idler Sheave and Boxes for Top of Mast.....	2451	2.00	2451	2.00	2452	2.00	2455	2.70
1 B. B. Sheave for Top of Mast.....	2108	4.20	2108	4.20	2138	5.40	2170	6.80
1 B. B. Sheave for Top of Mast.....	2072	3.75	2072	3.75	2108	4.55	2138	5.40
2 Pins for Sheaves.....	1208	2.30	1208	2.60	1209	3.80	1209	4.10
Total for Mast Fittings.....		\$48.35		\$61.15		\$85.75		\$119.20
1 Flat Boom Band.....	1067	\$10.50	1069	\$13.50	1070	\$17.50	1071	\$23.50
1 B. B. Sheave for Point of Boom.....	2108	4.20	2108	4.20	2138	5.40	2138	5.40
1 Pin for Sheave.....	1208	1.00	1208	1.15	1209	1.70	1209	1.90
Total for Boom Fittings.....		\$15.70		\$18.85		\$24.65		\$30.50
2 Straps for Top of Legs.....	1142	\$22.00	1143	\$36.00	1144	\$56.00	1145	\$80.00
2 Straps for Bottom of Legs.....	1155	12.00	1156	20.00	1157	28.00	1158	40.00
Total for Back Leg Fittings.....		\$34.00		\$56.00		\$84.00		\$120.00
1 Swivel Hook Hoisting Block.....		\$18.25		\$19.00		\$38.00		\$40.00
1 Strap Block for Hoisting Line.....			1386	8.40	1394	14.25	1409	18.00
1 Strap Block for Boom.....	1388	9.50	1397	16.00	1410	31.25	1420	39.00
1 Strap Block for Boom.....	1389	14.50	1397	16.00	1410	31.25	1420	39.00
Total for Blocks.....		\$42.25		\$59.40		\$114.75		\$136.00
Total for Complete Set of Fittings..		\$140.30		\$195.40		\$309.10		\$405.90

Capacities of Fittings. Boom Horizontal

Proportion Mast to Boom	Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given				Proportion Mast to Boom	Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given			
		Mast	Boom	Mast	Boom			Mast	Boom	Mast	Boom
10 in. Mast Fittings.	8 in. Boom and Back Leg Ftg.					14 in. Mast Fittings.	12 in. Boom and Back Leg Ftg.				
1:1 1/2	4 1/2	10x10x24	8x8x36	12x12x30	10x10x44	1:1 1/2	11	14x14x28	12x12x42	16x16x38	14x14x56
1:2	3	10x10x18	8x8x36	12x12x22	10x10x44	1:2	8	14x14x24	12x12x48	16x16x28	14x14x56
12 in. Mast Fittings.	10 in. Boom and Back Leg Ftg.					16 in. Mast Fittings.	14 in. Boom and Back Leg Ftg.				
1:1 1/2	7	12x12x28	10x10x42	14x14x32	12x12x50	1:1 1/2	16	16x16x28	14x14x42	18x18x42	16x16x62
1:2	5	12x12x22	10x10x42	14x14x24	12x12x50	1:2	12	16x16x26	14x14x54	18x18x32	16x16x62

FOR WINCHES, WIRE ROPE AND CLIPS, SEE INDEX

STIFF LEG HAND POWER DERRICK No. 31

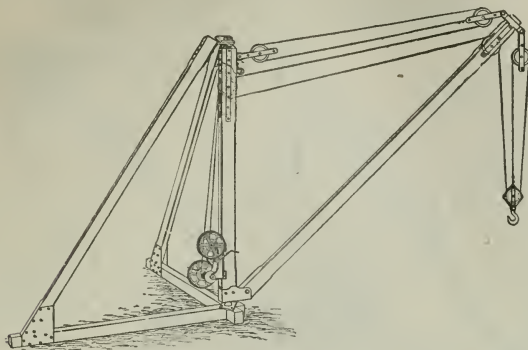


Fig. 31

PARTS OF LINES

10 inch Mast.....topping, 4	load, 2	14 inch Mast.....topping, 7	load, 4
12 inch Mast....." 5	" 3	16 inch Mast....." 7	" 5

Illustration shows ordinary stiff leg derrick operated entirely by hand power. This is the cheapest form of derrick, and, while slow in operation, is very efficient. Fittings can be varied as may be desired, retaining original design of rig.

PRICE LIST OF FITTINGS
Without Hand Power, Timber and Rope

Description of Parts	10 inch Mast Fittings No. 805		12 inch Mast Fittings No. 806		14 inch Mast Fittings No. 807		16 inch Mast Fittings No. 808	
	No.	Price	No.	Price	No.	Price	No.	Price
1 Standard Foot Block.....	917	\$11.50	919	\$18.00	921	\$24.00	924	\$45.00
1 Plain Step.....	954	9.60	954	9.60	955	19.00	955	19.00
1 Mast Top with Sheaves and S. Straps.....	1007	34.00	1008	44.00	1009	56.00	1010	73.00
1 Idler Sheave for Top of Mast.....		2.00		2.00		2.00		2.70
Total for Mast Fittings.....		\$57.10		\$73.60		\$101.00		\$139.70
1 Boom Band with Sheave Pin and St's.....	1078	\$17.00	1080	\$23.50	1081	\$28.00	1082	\$35.00
1 B. B. Sheave.....	2108	4.20	2108	4.20	2138	5.40	2138	5.40
Total for Boom Fittings.....		\$21.20		\$27.70		\$33.40		\$40.40
2 Straps for Top of Legs.....	1142	\$22.00	1143	\$36.00	1144	\$56.00	1145	\$80.00
2 Sets Plates for Bottom of Legs.....	1177	16.00	1178	22.00	1179	26.00	1180	36.00
Total for Back Leg Fittings.....		\$38.00		\$58.00		\$82.00		\$116.00
1 Swivel Hook Hoisting Block.....		\$18.25		\$19.00		\$38.00		\$40.00
1 Strap Block for Hoisting Line.....			1386	8.40	1394	14.25	1400	18.00
1 Strap Block for Boom.....	1388	9.50	1397	16.00	1410	31.25	1420	39.00
1 Strap Block for Boom.....	1389	14.50	1397	16.00	1410	31.25	1420	39.00
Total for Blocks.....		\$42.25		\$59.40		\$114.75		\$136.00
Total for Complete Set of Fittings..		\$158.55		\$218.70		\$331.15		\$432.10

Capacities of Fittings. Boom Horizontal

Proportion Mast to Boom	Capacity In Tons	Maximum Lengths of Untrussed Timber for Capacities Given				Proportion Mast to Boom	Capacity In Tons	Maximum Lengths of Untrussed Timber for Capacities Given			
		Mast	Boom	Mast	Boom			Mast	Boom	Mast	Boom
10 in. Mast Fittings. 8 in. Boom and Back Leg Fts.						14 in. Mast Fittings. 12 in. Boom and Back Leg Fts.					
1:1 1/2	4 1/2	10x10x24	8x8x36	12x12x30	10x10x44	1:1 1/2	11	14x14x28	12x12x42	16x16x38	14x14x56
1:2	3	10x10x18	8x8x36	12x12x22	10x10x44	1:2	8	14x14x24	12x12x48	16x16x28	14x14x56
12 in. Mast Fittings. 10 in. Boom and Back Leg Fts.						16 in. Mast Fittings. 14 in. Boom and Back Leg Fts.					
1:1 1/2	7	12x12x28	10x10x42	14x14x32	12x12x50	1:1 1/2	16	16x16x28	14x14x42	18x18x42	16x16x62
1:2	5	12x12x22	10x10x42	14x14x24	12x12x50	1:2	12	16x16x26	14x14x54	18x18x32	16x16x62

FOR WINCHES, ENGINES, MOTORS, ETC., SEE INDEX

STIFF LEG DERRICK No. 40

For Double Drum Steam or Electric Hoist

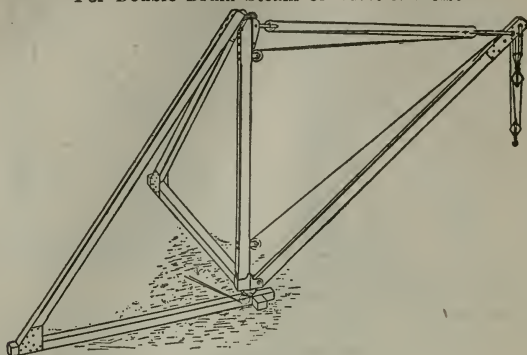


Fig. 40

PARTS OF LINES

10 inch Mast.....	topping, 4	load, 2
12 inch Mast.....	" 5	" 3
14 inch Mast.....	" 5	" 3
16 inch Mast.....	" 6	" 4

PRICE LIST OF FITTINGS
Without Timber and Rope

Description of Parts	10 inch Mast Fittings No. 840		12 inch Mast Fittings No. 841		14 inch Mast Fittings No. 842		16 inch Mast Fittings No. 843	
	No.	Price	No.	Price	No.	Price	No.	Price
1 Offset Foot Block.....	932	\$12.00	933	\$20.00	935	\$34.00	936	\$45.00
1 Step with two Sheaves.....	976	21.00	976	21.00	977	30.00	977	30.00
1 Steel Mast Top.....	1013	15.00	1014	21.00	1015	27.00	1016	36.00
1 Bracket with One Sheave.....	1361	9.70	1361	9.70	1367	12.15	1367	12.15
1 Bracket with Two Sheaves.....	1364	13.90	1362	13.90	1368	17.50	1368	17.50
Total for Mast Fittings.....		\$71.60		\$85.60		\$120.65		\$140.65
1 Flat Boom Band.....	1067	\$10.50	1069	\$13.50	1070	\$17.50	1071	\$3.50
1 B. E. Sheave for Point of Boom.....	2108	4.20	2108	4.20	2138	5.40	2138	5.40
1 Pin for Sheave.....	1208	1.00	1208	1.15	1209	1.70	1209	1.90
Total for Boom Fittings.....		\$15.70		\$18.85		\$24.60		\$30.80
2 Straps for Top of Legs.....	1142	\$22.00	1143	\$36.00	1144	\$56.00	1145	\$80.00
2 Sets of Plates for Bottom of Legs....	1177	16.00	1178	22.00	1179	26.00	1180	36.00
Total for Back Leg Fittings.....		\$38.00		\$58.00		\$82.00		\$116.00
1 Swivel Hook for Hoisting Block.....	1567	\$18.25	1569	\$19.00	1580	\$30.00	1584	\$40.00
1 Strap Block for Hoisting Line.....			1386	8.40	1390	10.80	1399	12.00
1 Strap Block for Boom.....	1388	9.50	1397	16.00	1409	20.50	1419	28.00
1 Strap Block for Boom.....	1389	14.50	1397	16.00	1409	20.50	1420	39.00
Total for Blocks.....		\$42.50		\$59.40		\$81.80		\$119.00
Total for Complete Set of Fittings..		\$167.55		\$221.85		\$309.05		\$406.45

Capacities of Fittings. Boom Horizontal

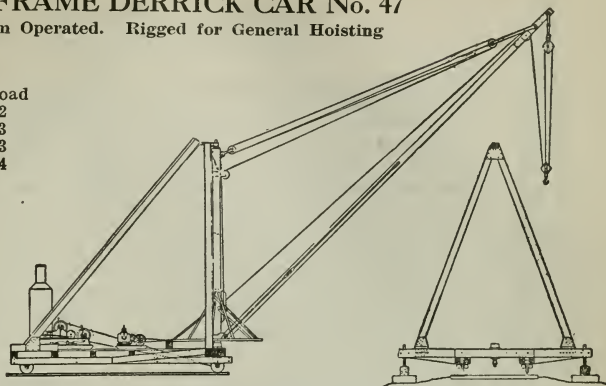
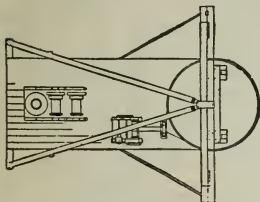
Proportion Mast to Boom	Capacity in Tons	Maximum Lengths of Untrussed Timber for Capacities Given			
		Mast	Boom	Mast	Boom
10 in. Mast Fittings. 8 in. Boom and Back Leg Figs.					
1:1½	4½	10x10x24	8x8x36	12x12x30	10x10x44
1:2	3	10x10x18	8x8x36	12x12x22	10x10x44
12 in. Mast Fittings. 10 in. Boom and Back Leg Figs.					
1:½	7	12x12x28	10x10x42	14x14x32	12x12x50
1:2	5	12x12x22	10x10x42	14x14x24	12x12x50
14 in. Mast Fittings. 12 in. Boom and Back Leg Figs.					
1:1½	11	14x14x28	12x12x42	16x16x38	14x14x56
1:2	8	14x14x24	12x12x48	16x16x28	14x14x54
16 in. Mast Fittings. 14 in. Boom and Back Leg Figs.					
1:1½	16	16x16x28	14x14x42	18x18x42	16x16x62
1:2	12	16x16x26	14x14x54	18x18x32	16x16x62

"A" FRAME DERRICK CAR No. 47

Steam Operated. Rigged for General Hoisting

PARTS OF LINES

	Topping	Load
12 inch Mast.....	4	2
14 inch Mast.....	5	3
16 inch Mast.....	6	3
18 inch Mast.....	7	4

**PRICE LIST OF FITTINGS. Without Timbers, Rope or Car**

Description of Parts	12 inch Mast Fittings No. 870		14 inch Mast Fittings No. 871		16 inch Mast Fittings No. 872		18 inch Mast Fittings No. 873	
	No.	Price	No.	Price	No.	Price	No.	Price
1 Standard Foot Block.....	919	\$18.00	921	\$24.00	924	\$45.00	925	\$60.00
1 Plain Step	954	9.60	955	19.00	955	19.00	956	21.20
1 Step Bracket with Two Sheaves.....	961	16.75	962	25.00	962	25.00	963	33.35
1 Round Mast Top.....	996	21.00	997	27.00	998	36.00	999	47.00
1 Structural Bracket for Face of Mast...	1301	26.25	1304	33.00	1307	37.50	1310	46.75
1 Bracket with One Sheave.....	1361	9.70	1367	12.15	1367	12.15	1370	16.00
Total for Mast Fittings.....		\$101.30		\$140.15		\$174.65		\$224.30
1 Steel Boom Point with Boom and Load Balls	1092	\$66.00	1093	\$81.00	1094	\$115.00	1095	\$140.00
2 Boom Heel Plates.....	1186	7.00	1187	7.50	1188	10.00	1189	13.50
Total for Boom Fittings.....		\$73.00		\$88.50		\$125.00		\$153.50
1 Steel Bull Wheel.....	903	\$130.00	904	\$175.00	905	\$300.00	906	\$340.00
2 Fair Leader Sheaves.....	1293	14.00	1294	18.00	1294	18.00	1295	22.00
Total for Bull Wheel.....		\$144.00		\$193.00		\$318.00		\$362.00
1 "A" Frame Head.....	1111	\$45.00	1112	\$60.00	1113	\$90.00	1114	\$125.00
2 Sets Bottom "A" Frame Plates.....	1173	25.00	1174	32.00	1175	44.00	1176	60.00
Total for "A" Frame Fittings.....		\$70.00		\$92.00		\$134.00		\$185.00
2 Straps for Top of Legs.....	1142	\$22.00	1143	\$36.00	1144	\$56.00	1145	\$80.00
2 Sets of Plates for Bottom of Legs...	1177	16.00	1178	22.00	1179	26.00	1180	36.00
Total for Back Leg Fittings.....		\$38.00		\$58.00		\$82.00		\$116.00
1 Swivel Hook Hoisting Block.....	1563	\$13.50	1567	\$18.25	1571	\$25.00	1581	\$38.00
1 Shackle Block for Hoisting Line.....			1729	13.75	1735	20.50	1741	22.50
1 Strap Block for Boom.....	1392	10.00	1403	19.50	1409	20.50	1461	63.00
Total for Blocks.....		\$23.50		\$51.50		\$66.00		\$123.50
4 Double Flange Car Wheels and Axles	3187	\$58.00	3189	\$80.00	3191	\$148.00	3191	\$148.00
8 Journal Boxes with Brass Liners.....	3213	28.00	3214	52.00	3215	100.00	3215	100.00
2 Jack Screws.....	1115	50.00	1115	50.00	1115	50.00	1115	50.00
Total for Car Fittings.....		\$136.00		\$182.00		\$298.00		\$298.00
Total for Complete Set of Fittings..		\$585.80		\$805.15		\$1107.65		\$1462.30

Capacities of Fittings. Boom Horizontal Proportion Mast to Boom 1:2½

Capacity in Tons	Size of Timber and Maximum Length of Boom for Capacities Given				Capacity in Tons	Size of Timber and Maximum Length of Boom for Capacities Given			
	Mast	Boom	"A" Frame	Back Legs		Mast	Boom	"A" Frame	Back Legs
	12 inch Mast Fittings					16 inch Mast Fittings			
3	12x12	10x10x60	10x10	8x8	7	16x16	14x14x66	14x14	12x12
	14 inch Mast Fittings					18 inch Mast Fittings			
5	14x14	12x12x66	12x12	10x10	12	18x18	16x16x60	16x16	14x14

FOR ENGINES AND BOILERS, SEE INDEX

SASGEN DERRICKS

SETTER DERRICKS

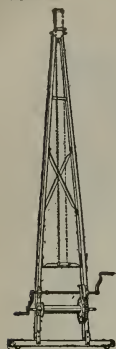


Fig. 5711
Top Point
Setters'
Derrick

TOP POINT SETTER DERRICK

Capacity	Length feet	Price
3000	18	\$45.65
3000	20	48.10
3000	22	50.60

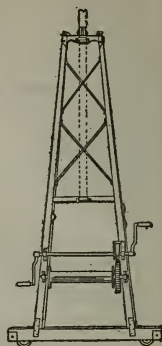


Fig. 5712
Regular
Setters' Derrick

REGULAR SETTER DERRICK

Capacity	Length feet	Price
4000	18	\$52.50
4000	20	55.00
4000	22	57.50

If longer lengths are desired add \$1.00 per foot net. For more capacity add \$2.00 per 1000 lbs. Fish tackle to swing derrick out and in containing 5 blocks and 50 feet $\frac{5}{8}$ inch rope, \$5.00 net.

POLE DERRICK COMPLETE

Has a capacity of 1400 lbs., equipped with winch not geared, or 2500 to 3000 lbs. equipped with geared winch. The weight is from 200 to 300 lbs., according to capacity. It is built of $5\frac{1}{2} \times 5\frac{1}{2}$ selected wood with extension sheave frame, so that the load can be hoisted to top without scraping pole. The derrick is equipped with rollers at the bottom, winch, cable, and block, complete, ready for hoisting. No guy lines. Iron and stone setters, carpenters and mason contractors have found this Pole Derrick one of the quickest and most practical derricks for setting iron, stone, timbers, heavy joists, framing, etc.

Capacity 1400 lbs., 18 ft. \$36.55 | Capacity 2500 to 3000 lbs., 18 ft. . \$43.10
Equipped with 110 ft. cable, 20 ft. . 37.80 | Equipped with 125 ft. cable, 20 ft. . 44.35
Block, winch not geared, 22 ft. . . 39.00 | Block, geared winch, 22 ft. . . . 45.60

If longer lengths are desired add \$1.00 per foot net. Fish tackle to swing derrick out and in, containing 5 blocks and 50 feet $\frac{5}{8}$ inch rope, \$5.00 net.



Fig. 5713

CIRCLE SWING COUNTERWEIGHT DERRICK

Fig. 5714

For Loading and Unloading Cars and Wagons

Is especially handy around foundries or yards where heavy castings, iron in pipe, beams and bars, timbers, stone, etc., are loaded or unloaded, and for handling boats on docks or platforms in and out of water. Also for building and excavating. This machine can be used portable or stationary. It has a height of 14 feet, a circle swing of 18 feet, weight about 500 lbs., and a capacity of 1500 lbs., with cable and block ready for use.

Price \$118.75

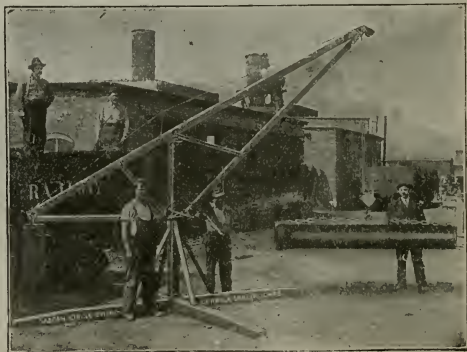


Fig. 5714

SASGEN DERRICKS

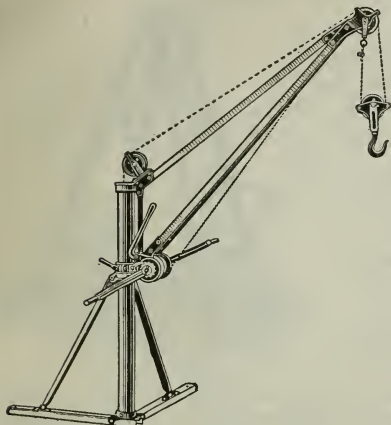


Fig. 5751

The Newest Model Portable Circle Swing
DerricksSTEEL CHAMPION CIRCLE SWING
BUILDERS' DERRICK

This Portable Derrick is built of all steel, has self-lubricating bushings, load and boom brake. Boom can be removed in a few seconds by loosening one nut and raising 2 inches. Bottom sills and mast fold together, making it in two parts, compact enough so that a contractor can haul it to jobs in his auto.

For loads up to 1000 lbs. this Steel Champion cannot be excelled by anything on the market.

Capacity 100 lbs., weighs only 200 lbs., can be operated by hand, horse or power. Height, 7½ feet; boom extends 5 feet. Equipped with 110 feet crucible steel cable, block, cleats, and bolts for fastening, complete ready for work.

Drum holds 135 feet.

Price hand power.....	\$46.85
Price hand and power.....	48.10
Extra cable	per ft. See index

PEERLESS CIRCLE SWING
DERRICK

This Portable Derrick is built of all steel except bottom sills, has self-lubricating bushings, load and boom brake, can be used hand, horse or power. Boom can be taken off in an instant by removing one nut. The bottom sills and mast fold together making it easy to remove or put up. Many contractors haul them to jobs in their automobiles. For the above reasons the machine is almost indispensable to contractors who build from 2 to 4 story buildings; for hoisting joists, timbers, iron, stone, terra cotta, reinforcing bars, wheelbarrows, etc.

Capacity 1,800 lbs., weight 275 lbs., height 8 feet, swing 10 feet. Equipped with 125 feet crucible steel cable, block, cleats and bolts for fastening, complete ready for work.

Drum holds 175 feet.

Price hand power.....	\$59.35
Price hand and power.....	56.25
Extra cable	per ft. See index

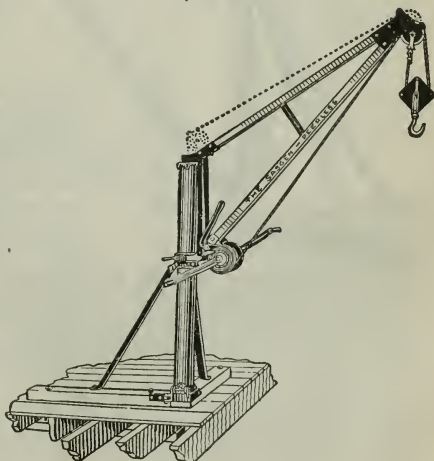


Fig. 5752

FOR POWER HOISTING MACHINERY, SEE INDEX

SASGEN DERRICKS

TRIPOD AND TWIN SETTER DERRICK

FOR
LAYING
SEWER PIPE,
SETTING
GRAVE STONES,
HANDLING
BURIAL VAULTS,
AND
MANY OTHER
PURPOSES

Complete with
Cable and Block



Fig. 5731

Capacity 3000 lbs., equipped with geared
winch, 100 ft. cable. \$43.75



Fig. 5732

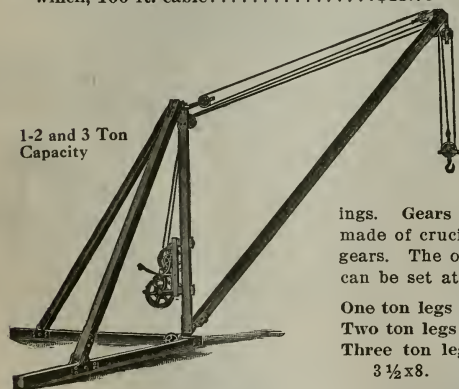
Capacity 5000 lbs. \$73.75
Capacity 7000 lbs. 78.75

STIFF LEGGED DERRICKS

These Stiff Legged Derricks are built with split mast and boom, fitted throughout with crucible steel fittings, making the Derricks light and strong and easy to set up. They can be used by hand or power and for the above reason are especially handy on build-

ings. Gears and frames of double hoisting winch are also made of crucible steel, which means safety and no breaking of gears. The one ton bottom sills work hinge-like in front and can be set at angle desired.

One ton legs and sills are 4x6, split mast and boom two-2x6.
Two ton legs and sills are 6x6, split mast and boom two-3x6.
Three ton legs and sills are 6x8, split mast and boom two-3½x8.



1-2 and 3 Ton
Capacity

Fig. 5733

PRICES OF LARGER SIZES ON APPLICATION

ONE TON CAPACITY			TWO TON CAPACITY			THREE TON CAPACITY		
Length of Boom feet	Equipped for Power	Equipped with Double Drum Winch for Hand and Power	Length of Boom feet	Equipped for Power	Equipped with Double Winch for Load and Boom, also Power	Length of Boom feet	Equipped for Power	Equipped with Double Winch for Load and Boom, also Power
12	\$110.00	\$137.50	18	\$150.00	\$193.75	20	\$225.00	\$268.75
14	112.50	140.00	20	156.25	200.00	22	231.25	275.00
16	115.00	142.50	22	162.50	206.25	24	237.50	281.25
18	117.50	145.00	24	168.75	212.50	26	250.00	287.50
20	120.00	147.50	26	175.00	218.75	28	262.50	300.00
22	122.50	150.00	28	187.50	231.25	30	275.00	312.50
24	125.00	152.50	30	200.00	243.75	32	287.50	325.00
..	.....	.....	..	.....	.....	34	300.00	337.50
..	.....	.....	..	.....	.....	36	312.50	350.00
..	.....	.....	..	.....	.....	38	325.00	362.50
..	.....	.....	..	.....	.....	40	337.50	375.00

SASGEN DERRICKS

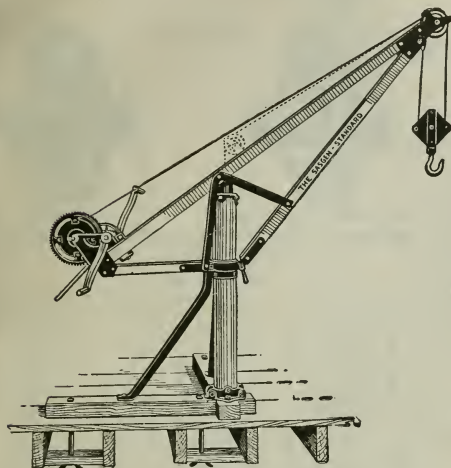


Fig. 5741

STANDARD CIRCLE SWING
BUILDERS' DERRICK

This derrick has all crucible steel and malleable fittings, including winch, making the machine strong and safe on buildings. Has boom and load brake and is built so that the boom can be quickly detached. Mast folds to bottom sills, making it easy to take apart or set up. For hoisting loads 1500 to 2500 lbs. by hand or power this Standard Circle Swing Derrick has no equal and is the only full circle swing builder's derrick with that capacity.

Capacity 2500 lbs., weight 350 lbs., height 8 feet, swing 10 feet. Equipped with geared winch, 150 feet $\frac{5}{8}$ inch steel cable, block cleats and bolts for fastening. Complete, ready for use.

Drum holds 275 feet.

Price, hand power.....	\$61.85
Price, hand and power.....	65.60
Standard with steel boom.....	extra 3.15
Extra cable	per ft. see index

"A" FRAME DERRICK

Capacity 1400 to 2500 lbs., height 20 feet. Equipped with 125 feet of steel cable, block, and winch. Is built light and strong. By removing 4 bolts it comes in 4 parts. This derrick is very handy for hoisting and setting timbers, heavy joists, iron beams, columns, etc. It is mounted on swivel rollers and can be easily moved around on the floor, can be used without guy lines. We can furnish an "A" Frame Pole with regular pole derrick fittings that same can be used with "A" frame bottom uprights, or as a regular Pole Derrick with guy line. Price, extra.....\$7.25

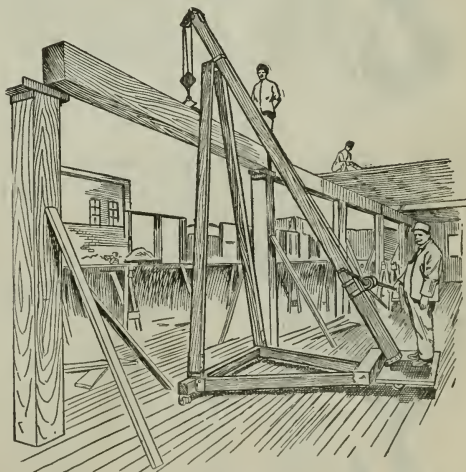


Fig. 5742

Capacity 1400 lbs., equipped with 110 feet cable, block, winch not geared.....	\$61.85
Capacity 2500 lbs., equipped with 125 feet cable, block, geared winch.....	65.60
Combination Pole and "A" Frame, 2500 lbs.....	73.10

DERRICK FITTINGS

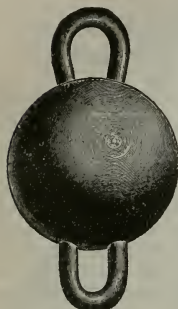
FALL LINE BALLS
Plain Ball

Fig. 1895

No.	Weight lbs.	Capacity Tons	Price
1895	105	5	\$ 7.50
1896	115	8	8.00
1897	218	8	14.00
1898	230	12	14.75
1899	250	20	16.00
1900	300	12	20.00
1901	320	20	21.50
1902	500	12	28.50
1903	520	20	30.00
1904	550	20	32.00
1905	1100	50	55.00

WEIGHTED SHEAVE
BLOCKS

Fig. 1909

Order No.	Size of Sheave	Capacity in Tons	Extra Weight on Block	Total Weight	Price
1518	10x1 1/2 x 1 1/4	3	100	150	\$17.00
1519	12x2 x 1 1/2	5	150	210	22.00
1520	14x2 x 2	8	200	300	29.00
1521	16x2 x 2 1/4	12	300	420	45.00

BALL WITH HOOK



Fig. 1518

Order No.	Weight lbs.	Capacity in Tons	Price
1909	125	5	\$ 13.80
1910	140	8	17.00
1911	243	8	23.00
1912	260	12	26.75
1913	290	20	32.50
1914	330	12	32.00
1915	360	20	38.00
1916	535	12	41.00
1917	560	20	46.00
1918	610	30	62.00
1919	1200	50	122.00

Balls of other weight made to order

SHEAVES

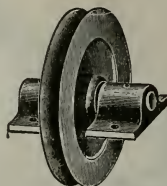


Fig. 190A. Key Seated

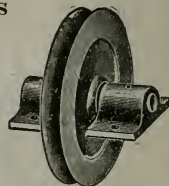


Fig. 190B

SHEAVES WITH FIXED STEEL AXLE AND
SOLID JOURNAL BOXES

For Manila Rope

Size Sheave	For Manila Rope Diameter	Com. Bushed Each
6 x 1 5/8 x 3/4	1 1/4	\$ 2.25
7 1/2 x 1 3/4 x 7/8	1 3/8	2.50
8 1/2 x 1 7/8 x 1	1 1/2	2.75
8 1/2 x 2 1/8 x 1	1 3/4	3.00
10 x 2 3/8 x 1 1/4	2	3.25
10 x 2 5/8 x 1 1/4	2 1/4	3.50
11 x 3 1/4 x 1 1/2	2 1/2	4.50
13 x 4 x 1 1/2	3	5.25
15 x 4 1/2 x 1 1/2	3 1/2	8.00
17 x 5 x 1 3/4	4	11.50

For Wire Rope

Size Sheave	For Wire Rope Diameter	Common Bushed Each
6x1 x 3/4	1/4	\$2.25
8x1 1/4 x 3/4	3/8	2.50
10x1 1/2 x 7/8	3/8	3.25
12x1 3/4 x 1	1/2 and 5/8	4.00
14x2 x 1 1/8	5/8 and 3/4	4.75
16x2 x 1 1/4	5/8 and 3/4	5.50
18x2 3/8 x 1 1/4	7/8 and 1	7.00

SELF-LUBRICATED SHEAVES, STEEL AXLE
AND SOLID JOURNAL BOXES

Axles Fastened to Boxes and Sheaves Run Loose

For Manila Rope

Size Sheave	For Manila Rope Diameter	Each
6 x 1 5/8 x 3/4	1 1/4	\$2.75
7 1/2 x 1 3/4 x 7/8	1 3/8	3.15
8 1/2 x 1 7/8 x 1	1 1/2	3.50
8 1/2 x 2 1/8 x 1	1 3/4	3.75
10 x 2 3/8 x 1 1/4	2	4.75
10 x 2 5/8 x 1 1/4	2 1/4	6.00
11 x 3 1/4 x 1 1/2	2 1/2	7.00
13 x 4 x 1 1/2	3	8.75

For Wire Rope

Size of Sheave	For Wire Rope Diameter	Each
6x1 x 3/4	1/4	\$ 3.00
8x1 1/4 x 3/4	3/8	3.50
10x1 1/2 x 7/8	3/8	4.50
12x1 3/4 x 1	1/2 and 5/8	5.50
14x2 x 1 1/8	5/8 and 3/4	6.75
16x2 x 1 1/4	3/4 and 7/8	8.00
18x2 3/8 x 1 1/4	1	9.25
20x2 1/2 x 1 1/2	1 1/8	11.00

SINGLE FLANGE CAR WHEELS AND AXLES

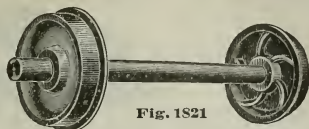


Fig. 1821

Diameter at Tread inches	Width of Tread, inches	Size of Journal inches	Gauge of Track, inches	Two Wheels with Axle			One Wheel Only		
				No.	Approx. Weight lbs.	Price	No.	Approx. Weight lbs.	Price
11	2	1 1/2	30	3150	120	\$ 7.00	3151	50	\$ 2.50
11	2 1/2	1 1/2	30	3152	161	9.40	3153	70	3.50
11 1/2	2 3/4	1 3/4	36	3154	233	14.50	3155	100	5.00
12	3 1/4	1 3/4	36	3156	144	7.50	3157	55	2.75
14	2 1/2	1 3/4	36	3158	153	9.00	3159	60	3.00
15	2 3/4	2 1/4	42	3160	252	14.70	3161	100	5.00
16	3 1/2	2 1/4	42	3162	252	14.70	3163	98	5.00
16	3 1/4	2 1/4	42	3164	325	19.00	3165	133	6.75
18	3 1/2	2 3/4	56 1/2	3166	476	26.00	3167	175	8.75
18	2 1/2	2 3/4	56 1/2	3168	493	27.00	3179	185	9.25
20	3 1/2	2 3/4	56 1/2	3170	515	28.00	3171	195	9.75
20	3 3/4	3 1/2	56 1/2	3172	943	50.00	3173	365	18.25

DOUBLE FLANGE CAR WHEELS AND AXLES

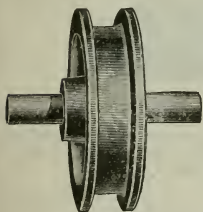


Fig. 3180-3192

No.	Diameter of Tread inches	Width of Tread inches	Width Out- side Flanges inches	Diameter of Axle inches	Length of Axle inches	Pattern Number	Approximate Weight lbs.	Price One Wheel and Axle
3180	12	2 3/4	5 1/8	1 3/4	12	W150	133	\$ 8.00
3181	14	2 1/4	4	1 3/4	11	W 71	118	7.00
3182	13 3/4	2 3/4	5 1/8	2 1/4	14	W148	148	9.00
3183	15	2 3/4	4 3/4	2 1/4	14	W 28	187	11.00
3184	16	2 5/8	4 3/8	2 1/4	13 1/2	W 56	172	10.00
3185	16	3 1/2	5 3/4	2 3/4	17	W 54	236	13.00
3186	18	2	4 3/8	2 3/4	15 1/2	W 88	261	14.20
3187	18	3 1/2	5 3/4	2 3/4	17	W 72	268	14.50
3188	20	2 3/4	5 3/4	3 1/2	19 1/2	W149	385	20.00
3189	24	3 1/8	5 3/8	3 1/2	19 1/2	W 32	385	20.00
3190	24	2 3/4	5 3/4	3 1/2	19 1/2	W147	440	22.00
3191	24	5 1/2	8 1/2	4 1/4	26	W146	746	37.00
3192	30	3	5	4 1/4	22	W 70	555	28.00



Fig. 3210-3215

JOURNAL BOX WITH BRASS LINER—
OPEN END

No.	Diameter and Length of Journal	Size of Base	Price
3210	1 1/2 x 3	3 x 7 1/2	\$ 1.50
3211	1 3/4 x 3	3 x 7 1/2	1.50
3212	2 1/4 x 4	4 x 8 1/4	2.50
3213	2 3/4 x 5	5 x 8 1/2	3.50
3214	3 1/2 x 6 3/4	5 1/4 x 12	6.50
3215	4 1/4 x 8	6 1/4 x 16	12.50

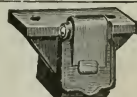


Fig. 3220-3225

JOURNAL BOX WITH BRASS LINER—
SPRING COVER

No.	Diameter and Length of Journal	Size of Base	Price
3220	1 1/2 x 3	4 1/2 x 8	\$ 2.75
3221	1 1/2 x 3	4 1/2 x 8	2.75
3222	2 1/4 x 4	5 x 10	3.75
3223	2 3/4 x 5	5 1/4 x 14	5.00
3224	3 1/2 x 6 3/4	5 1/2 x 16	8.50
3225	4 1/4 x 8	6 1/4 x 18	16.00

GEO. B. CARPENTER & CO.

CHOCKS FOR MANILA ROPE



Single Sheave Chock
Fig. 1285-1286



Double Sheave Chock
Fig. 1288-1289

Size of Sheaves	Kind of Rope	No.	Price	Size of Sheaves	Kind of Rope	No.	Price
6x3	Manila	1285	\$5.50	6x3	Manila	1288	\$10.00
6x1 3/4	Wire	1286	4.00	6x1 3/4	Wire	1289	7.50

GUIDE SHEAVES FOR WIRE ROPE

The Small Guide Sheave can be put in Three Positions for Different Leading Angles. It prevents the Rope from Getting Out of the Sheave Groove.



Steel Frame
Fig. 1291-1295

No.	Size of Sheave	Price	No.	Price
1291	8x2x1 1/4	\$ 4.00	1296	\$ 7.00
1292	10x2x1 1/4	5.25	1297	8.50
1293	12x2x1 1/4	7.00	1298	10.00
1294	14x2x1 1/4	9.00		
1295	16x1x1 1/2	11.00		



Cast Iron Frame
Fig. 1296-1298

CAR PULLER LEAD SHEAVES In Cast Iron Frame



Single
Fig. 1866A



Double
Fig. 1866B

These sheaves are made of cast iron, heavy pattern; the groove is very deep and machine turned. They run loose on a steel pin that is securely attached to a well proportioned, heavy cast iron frame. The grooves are made for single or double sheaves, as desired.

Price List

Style	Diameter of Sheaves, ins.	Price	Style	Diameter of Sheaves, ins.	Price
Single	9	\$ 6.25	Single	18	\$ 28.00
"	12	13.00	Double	18	55.00
Double	12	26.00	"	24	120.00

DERRICK SHEAVES SHEAVE WITH GUARD P. B. B. SHEAVES



Fig. 4758-4762

No.	Diameter of Sheave	Price
4758	8	\$ 4.00
4759	10	5.25
4760	12	7.00
4761	14	9.00
4762	16	11.00

BULL WHEELS

On this page we illustrate two types of Bull Wheels. Both are made in two pieces and are easily attached to derrick after mast and boom are in place and rigged.

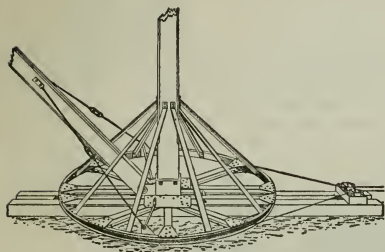


Fig. 900-907

STEEL

No.	Diameter of Wheel, feet	Price
900	5	\$ 90.00
901	8	100.00
902	10	110.00
903	12	130.00
904	14	175.00
905	16	300.00
906	18	340.00
907	20	400.00

This Bull Wheel is constructed entirely of steel with steel braces to mast, and rods from rim to boom, making it very rigid, durable and easily attached. The rods apply the strain of the ropes directly to the boom, thereby avoiding any tendency to twist and break the derrick. Price does not include Foot Block, Guide Sheave or Timber.

WOOD

No.	Diameter of Wheel, feet	Price
908	8	\$ 70.00
909	10	80.00
910	12	90.00
911	14	100.00
912	16	125.00
913	18	150.00

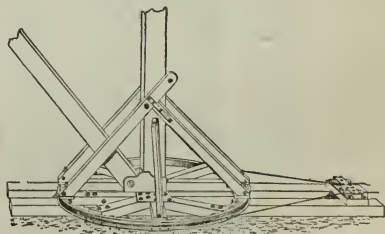


Fig. 908-913

The Wood Wheel is constructed with a steel rim; it is cheaper than the steel, however; for a derrick that is moved frequently it is preferable. No rods are used in this wheel as the braces are arranged so as to act directly against the boom. With this type it is unnecessary to cut or bore either mast or boom.

Price is for Bull Wheel only, and does not include foot block, guide sheaves or timber, in mast, boom and stringers.

DERRICK EQUIPMENT

ROPE FITTINGS

Guy Tighteners are a great advantage, as with them guys can be kept taut without removing the fasteners.

GUY TIGHTENER WITH SHEAVE



Fig. 1843

No.	Diameter Screw	Take Up, inches	Price
1843	1	72	\$ 8.00
1844	1 1/4	72	10.00
1845	1 1/2	72	13.50
1846	2	72	18.00



Fig. 2577

GUY SHACKLE WITH SHEAVE

No.	Size Shackle	Diameter Sheave	Price
2577	1	5	\$1.25
2578	1 1/4	6	2.25
2579	1 1/2	8	3.50

DERRICK GUY TIGHTENERS OR CONTRACTORS' TURNBUCKLE

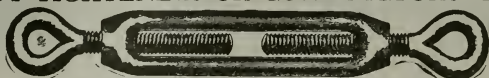


Fig. S224 Black Finish

In ordering Contractors' Turnbuckles always give diameter of thread and length of buckles inside. We can furnish these turnbuckles galvanized at additional prices.

Diameter of Thread, inches	Inside Diameter Eye, inches	Length of Buckle Inside							
		6-inch	9-inch	12-inch	15-inch	18-inch	24-inch	36-inch	72-inch
5/8	1 1/8	\$1.75	\$2.25	\$2.75	\$4.00	\$5.00	\$7.00	.....	.....
3/4	1 1/4	2.40	3.00	3.70	5.00	6.30	8.80	.....	.....
7/8	1 3/8	3.00	3.75	4.52	6.00	7.60	10.50	.....	.....
1	1 1/2	3.50	4.40	5.25	7.00	8.80	12.30	\$14.10	.....
1 1/8	1 5/8	4.00	5.00	6.00	8.00	10.00	14.00	16.00	\$24.00
1 1/4	1 3/4	5.00	6.75	7.52	10.00	12.50	17.00	20.00	\$32.00
1 3/8	2	5.50	7.00	8.25	11.00	13.80	19.30	22.00	33.25
1 1/2	2 1/4	6.00	7.50	9.00	12.00	16.00	21.00	25.00	36.00
1 5/8	2 1/2	7.00	8.75	10.50	14.00	17.50	24.50	28.00	42.00
1 3/4	2 3/4	8.00	10.00	12.00	16.00	20.00	28.00	32.00	48.00
1 7/8	3	9.00	11.25	13.50	18.00	22.50	31.50	36.00	54.00
2	3 1/2	10.60	13.25	15.90	21.20	26.50	37.00	42.40	63.60

FOR OTHER STYLES OF TURNBUCKLES, SEE INDEX

AUTOMATIC HOLDING DRUM

Used in Connection with a Single or Double Drum Engine for the Operation of a Two Line Bucket or Skip

Particularly adapted for use with our No. 45 Derrick, shown on another page.

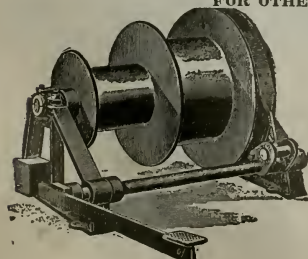
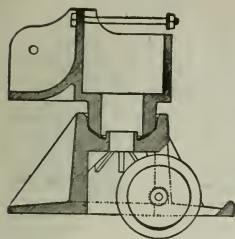


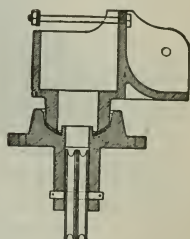
Fig. 7476

Order No.	Size of Holding Drum	Size of Counterbalance Drum	Holding Capacity on Bucket Line Lbs.	Price
7476	18x12	10x12	7,000	\$120.00
7477	18x12	10x12	14,000	220.00

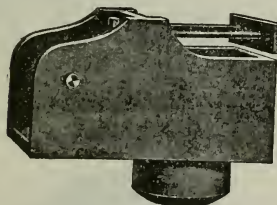
DERRICK FITTINGS



The illustrations on this page are sectional views of the improved step bearing used on the foot blocks and steps shown on pages following. It embodies features of lubrication with the ball and socket principal of bearing. The pintle on the foot block and the cup portion of the step are chilled and between these bearing surfaces is a steel cupped washer all working in a reservoir of oil. The points of excellence claimed for this mast foot bearing are lubrication, wearing qualities and full contact between bearing surfaces should the mast be out of plumb. All sheaves in derrick are furnished bronze bushed, graphite self lubricating unless otherwise ordered, and can be supplied with center oiling pins or with oil chamber in the sheave.

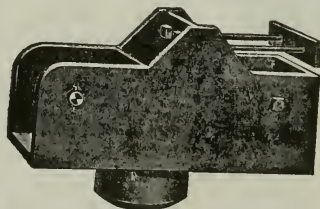


FOOT BLOCKS



STANDARD FOOT BLOCKS

Fig. 915-926



OFFSET FOOT BLOCKS

Fig. 930-937

No.	Inside Measure in inches		Diameter of Pintle	Price	No.	Inside Measure in inches		Diameter of Pintle	Price
	Mast	Boom				Mast	Boom		
915	7 1/2	5 1/2	6 1/2	\$10.00	930	5 1/2	5 1/2	6 1/2	\$11.00
916	7 1/2	7 1/2	6 1/2	11.50	931	7 1/2	7 1/2	6 1/2	12.00
917	9 1/2	7 1/2	8 1/2	11.50	932	9 1/2	7 1/2	8 1/2	12.00
918	9 1/2	9 1/2	8 1/2	14.00	933	11 1/2	9 1/2	8 1/2	20.00
919	11 1/2	9 1/2	8 1/2	18.00	934	11 1/2	11 1/2	8 1/2	24.00
920	11 1/2	11 1/2	8 1/2	22.00	935	13 1/2	11 1/2	11	34.00
921	13 1/2	11 1/2	11	24.00	936	15 1/2	13 1/2	11	45.00
922	13 1/2	13 1/2	11	30.00	937	17 1/2	15 1/2	11	60.00
923	14 1/2	14 1/2	11	34.00					
924	15 1/2	13 1/2	11	45.00					
925	17 1/2	15 1/2	11	60.00					
926	22	20	15	80.00					

DERRICK CASTINGS

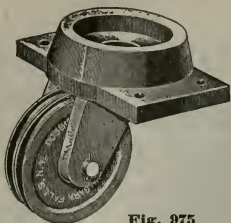


Fig. 975

Various types of Derrick Steps are shown on this page. The plain steps are for hand-power derricks, and those with one or more sheaves are for power. All sheaves in our standard fittings have phosphor bronze bushings unless otherwise stated.

DERRICK FITTINGS
STEPS WITH ONE SHEAVE

No.	Size of Plate inches	Inside Diam. of Cup, in.	Size of Sheaves	Price
970	11 x 18	6 1/2	12x2x1 1/2	\$11.00
971	11 1/2 x 19	8 1/2	14x2x2	17.00
972	15 x 27	11	16x2x2 1/4	25.00
973	19 x 29	11	18x2x2 1/2	33.00
974	39 x 39	15	22x3x2 3/4	73.00

STEPS WITH TWO SHEAVES

No.	Size of Plate inches	Inside Diam. of Cup, in.	Size of Sheave	Price
975	11 x 18	6 1/2	12x2x1 1/2	\$14.00
976	11 1/2 x 19	8 1/2	14x2x2	21.00
977	15 x 27	11	16x2x2 1/4	30.00
978	19 x 29	11	18x2x2 1/2	38.00
979	39 x 39	15	22x3x2 3/4	84.00

STEPS WITH THREE SHEAVES

No.	Sizes of Plate inches	Inside Diam. of Cup, in.	Size of Sheaves	Price
981	11 1/2 x 19	8 1/2	14x1 1/2 x 2	\$22.80
982	15 x 27	11	16x2 x 2 1/4	34.50
983	19 x 29	11	18x2 x 2 1/2	43.00

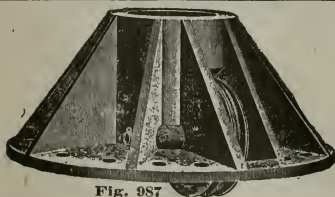


Fig. 987

COMBINED BASE AND STEP
CASTING WITH SHEAVES
SINGLE SHEAVE

No.	Diam. of base, in.	Height overall inches	Inside Diam. of Cup, in.	Size of Sheaves	Price
986	28	13 1/2	6 1/2	12x2x1 1/2	\$ 21.50
988	34	16	8 1/2	14x2x2	39.00
990	38	17	11	16x2x2 1/4	50.00
992	60	25	15	22x3x3	138.50

DOUBLE SHEAVE

No.	Diam. of base, in.	Height overall inches	Inside Diam. of Cup, in.	Size of Sheaves	Price
987	28	13 1/2	6 1/2	12x2x1 1/2	\$ 24.30
989	34	16	8 1/2	14x2x2	43.25
991	38	17	11	16x2x2 1/4	55.00
993	60	25	15	22x3x3	150.00

BOX CASTINGS



Fig. 941

No.	Diam. of Pintle	Inside Measure in inches	Price
941	6 1/2	8x 8	\$ 5.00
942	6 1/2	9x 9	6.00
943	8 1/2	10x10	7.50
944	8 1/2	12x12	10.00
945	11	14x14	13.50

BOOM SEAT CASTINGS

No.	Size Mast	Inside Measure for Boom	Price
947	8	6	\$ 4.00
948	10	8	5.00
949	12	10	7.00
950	14	12	9.50
951	16	14	12.00

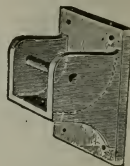


Fig. 947

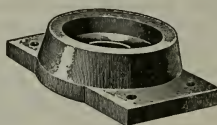


Fig. 953

PLAIN STEPS

No.	Size Plate inches	Inside Diam. of Cup, in.	Price
953	11 x 18	6 1/2	\$ 6.20
954	11 1/2 x 19	8 1/2	9.60
955	15 x 27	11	19.00
956	19 x 29	11	21.20

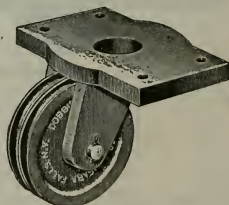


Fig. 960

STEP BRACKETS WITH SHEAVES
TWO SHEAVES

No.	Size of Plate inches	Size of Sheaves	Price
960	11 x 18	12x2x1 1/2	\$11.00
961	11 1/2 x 19	14x2x2	16.75
962	15 x 27	16x2x2 1/4	25.50
963	19 x 29	18x2x2 1/2	33.35

THREE SHEAVES

No.	Size of Plate inches	Size of Sheaves	Price
965	11 1/2 x 19	14x1 1/2 x 2	\$19.25
966	15 x 27	16x2 x 2 1/4	30.25
967	19 x 29	18x2 x 2 1/2	38.35

DERRICK FITTINGS

DERRICK SHEAVE BRACKETS

PHOSPHOR BRONZE BUSHED SHEAVES

For Centre of Mast



Fig. 1320-1332

Size Sheave	10x2 x1 1/4	12x2 x1 1/2	14x2 x2	16x2 x2	18x2 x2 1/4	20x2 x2 1/4	22x2 x2 1/2
Single No.	1320	1322	1324	1326	1328	1330	1332
Price ...	\$5.50	6.30	8.10	8.75	11.25	12.25	16.75
Double No.	1321	1323	1325	1327	1329	1331	1333
Price ...	\$7.75	9.15	12.40	14.25	18.55	20.05	25.50



Fig. 1321-1333

PHOSPHOR BRONZE BUSHED SHEAVES

For Face of Mast



Fig. 1340-1370

Size of Sheaves	Single Sheave		Double Sheave		Triple Sheave	
	No.	Price	No.	Price	No.	Price
8x1 1/2 x1 1/4	1340	\$5.00	1341	\$7.00	....	....
8x2 x1 1/4	1343	6.30	1344	8.20	....	....
10x1 1/2 x1 1/4	1346	5.50	1347	7.70	....	....
10x2 x1 1/2	1349	6.90	1350	9.40	....	....
12x1 1/2 x1 1/4	1352	6.00	1353	8.40	....	....
12x2 x1 1/2	1355	7.90	1356	11.20	1357	\$14.50
14x1 1/2 x1 1/2	1358	6.70	1359	9.90	1360	12.50
14x2 x2	1361	9.70	1362	13.90	1363	18.25
16x1 1/2 x1 1/2	1364	7.70	1365	11.40	1366	14.50
16x2 x2 1/4	1367	12.15	1368	17.50	1369	23.25
18x2 x2 1/2	1370	16.00	1371	23.25	1372	30.75

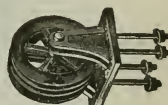


Fig. 1357-1372

DECK PLATE WITH BOOM SEAT

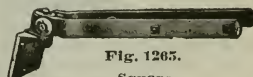


Fig. 1270

Our deck plate is very convenient to use on boats, docks, or places where space is limited. Having machine bearings, it is very easy to operate.

No.	Size of Boom inches	Price
1270	8	\$28.00
1271	10	34.00
1272	12	42.00
1273	14	65.00
1274	16	90.00

MAST AND GAFF FITTINGS

Fig. 1265A
RoundFig. 1265.
Square

Square

No.	Width of Bracket inches	Size of Jib inches	Price
1265	6	6	\$12.00
1266	9	8	16.00
2167	12	10	20.00

The Mast and Gaff fittings are for use on a rigid mast, or on corners and sides of buildings where a mast is not desired.

Round

For price give capacity and size of Mast and Gaff.

DERRICK CASTINGS AND FORGINGS

GUY CAP WITH LINKS



Fig. 533-540

The wrought iron rim on this guy cap is shrunk on the cast iron plate.

No.	Size	Number of Guys	Diameter of Mast at Top, ins.	Price
533	A	4	8	\$6.00
534	B	4	10	7.80
535	A	5	8	6.50
536	B	5	10	8.30
537	C	5	12	10.00
538	D	6	14	13.50
539	E	6	16	16.50
540	E	8	16	19.50

GUY CAP WITHOUT LINKS



Fig. 541-548

This guy cap is made with a wrought iron band.

No.	Size	Number of Guys	Diameter of Mast at Top, ins.	Price
541	A	4	8	\$4.25
542	B	4	10	6.00
543	A	5	8	4.50
544	B	5	10	6.25
545	C	5	12	7.00
546	D	6	14	8.00
547	E	6	16	11.00
548	E	8	16	13.00

STEEL GUY CAP WITH AND WITHOUT LINKS



Fig. 549-557

This guy cap is constructed of 2 plates of steel dished and bored to receive cast iron center and securely riveted together. The cast iron center increases the bearing on the gudgeon and reduces the wear.

No.	Size	Number of Guys	Diam. of Top, ins. Mast at	Price without Links	Price with Links
549	A	4	8	\$11.00	\$16.00
550	B	4	10	11.50	16.50
551	A	5	8	11.50	17.50
552	B	5	10	12.00	18.00
553	C	5	12	13.00	21.00
554	D	6	14	14.50	23.50
555	E	6	16	16.50	26.50
556	E	8	16	17.00	30.00
557	E	10	16	18.00	34.00

TWO LINK GUY STRAP

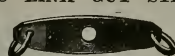


Fig. 1124-1126

No.	Size of Iron	Price
1124	5x 7/8	\$5.25
1125	6x1	6.00
1126	6x1 1/4	8.00

WROUGHT GUDGEON



Fig. 582

No.	Size	Diameter inches	Price
582	AA	2	\$4.20
583	A	2 1/4	5.00
584	B	2 1/2	6.00
585	C	2 3/4	7.50
586	D	3	9.50
587	E	3 1/2	12.00
588	E	4	15.00

PLAIN CAP FOR TOP OF MAST

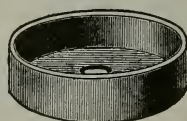


Fig. 558-562 1/2

No.	Size	Inside Measure inches	Price
558	AA	7 1/2	\$1.80
559	A	8 1/2	2.00
560	B	9 1/2	2.50
561	C	11 1/2	3.25
562	D	13 1/2	4.50
562 1/2	E	15 1/2	7.50

CAST STEEL GUY CAPS

For 12 Guys or Less

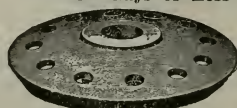


Fig. 1118-1123

No.	Size of Mast	Diameter of Gudgeon	Price
1118	8	2 1/2	\$13.00
1119	10	3	14.00
1120	12	3 1/2	25.00
1121	14	4	26.00
1122	16	4 1/2	35.00
1123	18	5	37.00

DERRICK FORGINGS

SPLIT BAND WITH
TWO LINKS

No.	Inside Diam. inches	Price
1067	7 1/2	\$10.50
1068	8 1/2	11.50
1069	9 1/2	13.50
1070	11 1/2	17.50
1071	13 1/2	23.50

Fig.
1067-1071OPEN BAND WITH
ONE LINK

No.	Inside Diam. inches	Price
1072	7 1/2	\$ 8.00
1073	8 1/2	10.00
1074	9 1/2	12.50
1075	11 1/2	15.00
1076	13 1/2	20.00
1077	15 1/2	26.00

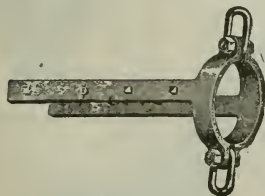
Fig.
1072-1077BOOM BAND WITH WELDED EX-
TENSION TO SHEAVE PIN

Fig. 1078-1083

No.	Inside Diam. inches	Diameter of Sheave Pin inches	Price
1078	7 1/2	2	\$17.00
1079	8 1/2	2	18.50
1080	9 1/2	2	23.50
1081	11 1/2	2 1/4	28.00
1082	13 1/2	2 1/4	35.00
1083	15 1/2	2 1/2	42.00

STEEL PIN WITH TWO COTTERS



Fig. 1198-1204

No.	Diam- eter	Length Between Cotter						
		8	10	12	14	16	18	20
1198	1 1/4	\$.40	\$.45	\$.50	\$.55	\$.60	\$.65	\$.70
1199	1 1/2	.50	.57	.65	.72	.80	.87	.95
1200	1 3/4	.65	.75	.85	.95	1.05	1.15	1.25
1201	2	.80	.90	1.00	1.15	1.30	1.45	1.60
1202	2 1/4	1.00	1.15	1.30	1.45	1.65	1.80	2.00
1203	2 1/2	1.20	1.40	1.60	1.80	2.00	2.20	2.40
1204	3	1.60	1.85	2.10	2.35	2.60	2.85	3.10

STEEL PIN WITH SQUARE END



Fig. 1205-1209

No.	Diam- eter	Length Over All				
		7 1/2	9 1/2	11 1/2	13 1/2	15 1/2
1205	1 1/4	\$.50	\$.55	\$.60	\$.65	\$.70
1206	1 1/2	.60	.67	.75	.82	.90
1207	1 3/4	.75	.85	.95	1.05	1.15
1208	2	1.00	1.15	1.30	1.45	1.60
1209	2 1/4	1.30	1.50	1.70	1.90	2.10

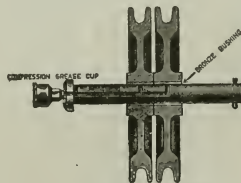
CENTER OILING, SHEAVE PIN, WITH COMPRESSION
GREASE CUP

Fig. 1211-1216

Sheaves are Lubricated by Screwing up the Grease Cup Cap, thus Forcing the Grease through the Center of the Pin

No.	Diam- eter.	Length Between Head and Cotter.						
		8	10	12	14	16	18	20
1211	1 1/2	\$2.75	\$3.25	\$3.75	\$4.25	\$4.75	\$5.25	\$5.75
1212	1 3/4	3.25	3.75	4.25	4.75	5.30	5.85	6.40
1213	2	3.80	4.40	5.00	5.60	6.20	6.80	7.40
1214	2 1/4	4.35	5.00	5.65	6.30	7.00	7.70	8.40
1215	2 1/2	5.00	5.75	6.50	7.25	8.00	8.75	9.50
1216	3	6.50	7.50	8.50	9.50	10.50	11.50	12.50

STRAP BLOCKS

PHOSPHOR BRONZE BUSHED SHEAVES

With Upset Bars. One Becket for each pair of Blocks



Fig. 1891

Capacity in Tons	Size of Sheaves	Single Sheave		Double Sheave		Triple Sheave	
		No.	Price	No.	Price	No.	Price
8	14x2x2	1425	\$16.00	1426	\$21.00	.....	.....
8	16x2x2 1/4	1427	17.50	1428	23.30	.....	.....
10	14x2x2	1429	17.00	1430	22.25	.....	.....
10	16x2x2 1/4	1431	18.50	1432	24.00	.....	.....
12	14x2x2	1433	18.00	1434	24.00	1435	\$36.00
12	16x2x2 1/4	1436	19.50	1437	26.00	1438	40.00
16	16x2x2 1/4	1439	22.00	1440	28.00	1441	42.50
16	18x2x2 1/2	1442	23.80	1443	31.25	1444	47.50
20	16x2x2 1/2	1445	24.25	1446	30.00	1447	44.00
20	18x2x2 1/2	1448	26.25	1449	33.85	1450	49.75
25	16x2x2 1/4	.....	.....	1451	35.00	1452	45.50
25	18x2x2 1/2	.....	.....	1453	38.75	1454	51.00
30	16x2x2 1/4	.....	.....	1455	43.00	1456	52.00
30	18x2x2 1/2	.....	.....	1457	47.00	1458	56.00
35	16x2x2 1/4	.....	.....	.....	.....	1459	53.30
35	20x2x2 1/2	.....	.....	.....	.....	1460	62.00
40	18x2x2 1/2	.....	.....	.....	.....	1461	63.00
40	22x2 1/2 x2 1/2	.....	.....	.....	.....	1462	70.00



Fig. 1891A

With Straight Bars

Capacity in Tons	Size of Sheaves	Single Sheave		Double Sheave		Triple Sheave	
		No.	Price	No.	Price	No.	Price
3	10x1 1/2 x1 1/4	1380	\$5.00	1381	\$8.00	.....	.....
3	12x1 1/2 x1 1/4	1382	5.50	1383	9.50	.....	.....
5	12x2 x1 1/2	1384	6.75	1385	11.25	.....	.....
5	14x2 x2	1386	8.40	1387	13.50	.....	.....
8	14x2 x2	1388	9.50	1389	14.50	.....	.....
8	16x2 x2 1/4	1390	10.80	1391	16.80	.....	.....
10	14x2 x2	1392	10.00	1393	15.25	.....	.....
10	16x2 x2 1/4	1394	11.25	1395	17.00	.....	.....
12	14x2 x2	1396	10.75	1397	16.00	1398	\$24.00
12	16x2 x2 1/4	1399	12.00	1400	18.00	1401	28.00
16	16x2 x2 1/4	1402	13.50	1403	19.50	1404	30.00
16	18x2 x2 1/2	1405	15.30	1406	22.75	1407	35.00
20	16x2 x2 1/4	1408	14.75	1409	20.50	1410	31.25
20	18x2 x2 1/2	1411	16.75	1412	24.35	1413	37.00
25	16x2 x2 1/4	.....	.....	1414	23.00	1415	35.00
25	18x2 x2 1/2	.....	.....	1417	26.25	1418	39.50
30	16x2 x2 1/4	.....	.....	1419	28.00	1420	39.00
30	18x2 x2 1/2	.....	.....	1421	32.00	1422	45.00



Fig. 1893



Fig. 1894

TANDEM SHEAVE



Fig. 1895

No.	Size of Sheaves	Capacity in Tons	Price
1510	14 x 2 x 1 1/4 10 x 2 x 1 1/4	5	\$13.50
1511	16 x 2 x 1 1/2 12 x 2 x 1 1/2	10	17.00
1512	18 x 2 x 2 14 x 2 x 2	15	22.75

DERRICK FITTINGS

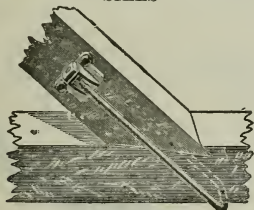
TOP STIFF LEG IRONS



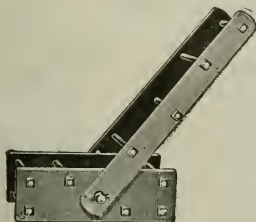
Fig. 1141-1148

No.	Size at Bend inches	Size of Gudgeon Pin inches	Thickness Through Eye inches	Price
1141	4x1 3/4	2 1/2	1 3/4	\$ 7.50
1142	6x2	3	2	11.00
1143	8x2	3 1/2	2	18.00
1144	6x3	4	2	28.00
1145	8x3	4 1/2	2	40.00
1146	10x3	5	2	55.00
1147	12x4	6	3	85.00
1148	18x4 1/2	9	3 3/4	160.00

BACK OR STIFF LEG CONNECTIONS TO SILLS


Fig. 1154-1158
Stirrup Connection

No.	Size of Iron	Width of Sill	Price
1154	1 1/8	6	\$ 4.00
1155	1 1/4	8	6.00
1156	1 1/2	10	10.00
1157	1 3/4	12	14.00
1158	2	14	20.00


Fig. 1160-1164
Pin Connection

No.	Size of Timber	Price
1160	8	\$ 9.00
1161	10	12.00
1162	12	20.00
1163	14	24.00
1164	16	35.00

BOTTOM PLATES FOR BACK LEGS

No.	Size of Timber	Price
1167	8	\$12.50
1168	10	15.50
1169	12	20.00
1170	14	25.50
1171	16	34.00

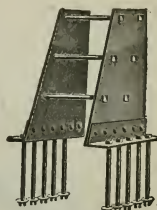


Fig. 1167-1171

"A" FRAME BOTTOM PLATES

No.	Size of Timber	Price
1173	10	\$12.50
1174	12	16.00
1175	14	22.00
1176	16	30.00

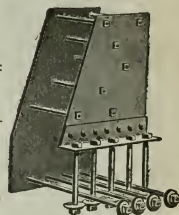


Fig. 1173-1176

BACK OR STIFF LEG CONNECTIONS TO SILLS

No.	Size of Timber	Price
1177	8	\$ 8.00
1178	10	11.00
1179	12	13.00
1180	14	18.00
1181	16	24.00

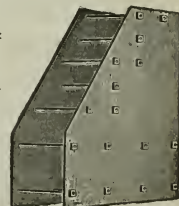


Fig. 1177-1181

BOTTOM BOOM WEARING PLATES

No.	Width of Boom Socket	Price
1185	7 1/2	\$ 6.50
1186	9 1/2	7.00
1187	11 1/2	7.50
1188	13 1/2	10.00
1189	15 1/2	13.50

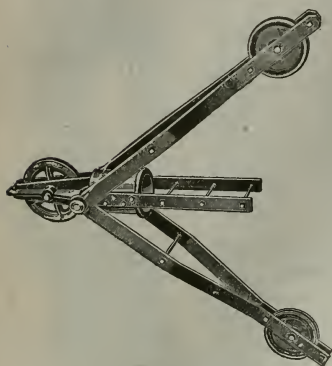


Fig. 1185-1189

DERRICK FITTINGS

BOOM POINTS

CAST IRON BOOM POINT WITH BAILS AND SHEAVES

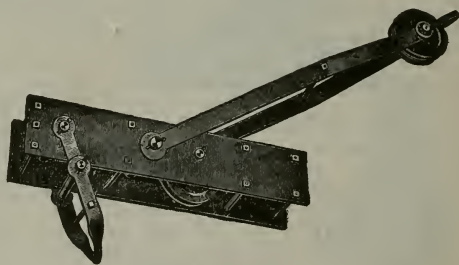


Steel Fig. 1084-1089

No.	Diam. Inside Inches	Boom Point Sheave	Load Bail Sheaves	Boom Bail Sheaves	Parts of Line for Load	Parts of Line in Topping	Price
1084	7 1/2	1-16x2x2	1-14x2x2	2-14x2x2	3	4	\$53.00
1085	9 1/2	1-18x2x2	1-14x2x2	2-14x2x2	3	5	66.00
1086	11 1/2	1-22x2x2 1/4	1-16x2x2 1/4	2-16x2x2 1/4	3	5	81.00
1087	13 1/2	1-24x2x2 1/4	1-16x2x2 1/4	3-16x2x2 1/4	4	6	115.00
1088	15 1/2	1-26x2x2 1/2	1-18x2x2 1/2	3-18x2x2 1/2	4	7	140.00
1089	17 1/2	1-28x3x2 1/2	1-20x2x2 1/2	3-20x2x2 1/2	4	7	160.00

STEEL BOOM POINT FOR GENERAL HOISTING WITH BAIL AND SHEAVES
FOR TOPPING AND LOAD BAIL

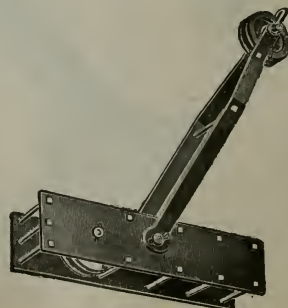
Order No.	Size of Timber Inches	Load Line Sheave	Boom Bail Sheaves	Parts of Line in Topping	Price
1091	8	1-14x2x2	2-14x2x2	4	\$48.00
1092	10	1-14x2x2	2-14x2x2	5	66.00
1093	12	1-16x2x2 1/4	2-16x2x2 1/4	5	81.00
1094	14	1-16x2x2 1/4	3-16x2x2 1/4	6	115.00
1095	16	1-18x2x2 1/2	3-18x2x2 1/2	7	140.00



Steel Fig. 1091-1095

STEEL BOOM POINT FOR BUCKET WORK WITH BAIL AND
SHEAVES FOR TOPPING

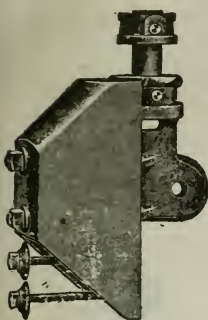
Order No.	Size of Timber Inches	Bucket Line Sheaves	Boom Bail Sheaves	Parts of Line in Topping	Price
1097	10	2-14x2x2	2-14x2x2	4	\$55.00
1098	12	2-16x2x2 1/4	2-16x2x2 1/4	4	65.00
1099	14	2-16x2x2 1/4	2-16x2x2 1/4	5	78.00
1100	16	2-18x2x2 1/2	2-18x2x2 1/2	5	95.00



Cast Fig. 1097-1100

DERRICK FITTINGS OFFSET MAST TOPS

MAST TOPS WITH REMOVABLE STEEL GUDGEONS



Cast—Fig. 1018-1022

No.	Inside Measure	Diameter Gudgeon inches	Price
1018	7 ½	2 ½	\$16.50
1019	9 ½	3	20.50
1020	11 ½	3 ½	27.50
1021	13 ½	4	35.00
1022	15 ½	4 ½	46.00

STRUCTURAL STEEL MAST TOP WITH SHEAVE FOR BOOM LINE

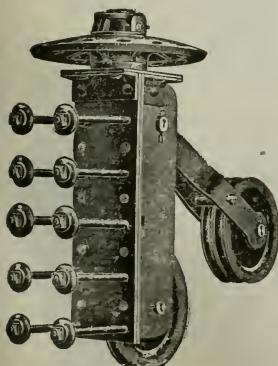
No.	Size of Timber, inches	Diameter of Gudgeon inches	Size of Sheave	Price
1024	10	3	14x2x2	\$45.00
1025	12	3 ½	14x2x2	45.00
1026	14	4	16x2x2 ¼	50.00
1027	16	4 ½	16x2x2 ¼	50.00
1028	18	5	16x2x2 ½	65.00



Steel—Fig. 1024-1028

STRUCTURAL STEEL MAST TOP AND GUY CAP WITH BOOM FALL SHEAVES

No.	Size of Timber inches	Diameter of Gudgeon inches	Size of Sheaves	Parts of Line in Topping	Price
1030	10	3	2-14x2x2	4	\$76.50
1031	12	3 ½	3-14x2x2	5	94.00
1032	14	4	3-16x2x2 ¼	5	106.00
1033	16	4 ½	3-16x2x2 ¼	6	130.00
1034	18	5	4-18x2x2 ½	7	165.00



Steel—Fig. 1030-1034

STRUCTURAL STEEL MAST TOP AS ABOVE WITH ROOSTER

No.	Size of Timber inches	Diameter of Gudgeon inches	Size of Sheaves	Parts of Line in Topping	Price
1036	10	3	2-14x2x2	4	\$106.50
1037	12	3 ½	3-14x2x2	5	124.00
1038	14	4	3-16x2x2 ¼	5	142.00
1039	16	4 ½	3-16x2x2 ¼	6	166.00
1040	18	5	4-18x2x2 ½	7	201.00

DERRICK FITTINGS

STANDARD CAST IRON MAST TOPS WITH REMOVABLE STEEL GUDGEONS

Round

No.	Inside Measure inches	Diameter of Gudgeon inches	Price
994	7 1/2	2 1/2	\$12.00
995	9 1/2	3	15.00
996	11 1/2	3 1/2	21.00
997	13 1/2	4	27.00
998	15 1/2	4 1/2	36.00
999	17 1/2	5	47.00
1000	22	9	180.00

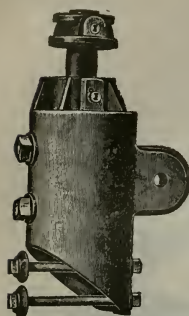


Fig. 994-1000

Square

No.	Inside Measure inches	Diameter of Gudgeon inches	Price
1001	7 1/2	2 1/2	\$12.00
1002	9 1/2	3	15.00
1003	11 1/2	3 1/2	21.00
1004	13 1/2	4	27.00
1005	15 1/2	4 1/2	36.00

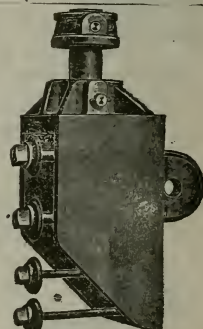
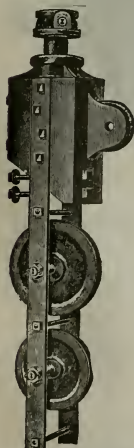


Fig. 1001-1005

MAST TOPS WITH SIDE STRAPS AND SHEAVES
FOR HAND POWER DERRICKS

No.	Inside Measure inches	Diameter of Gudgeon inches	Size of Sheaves	Price
1006	7 1/2	2 1/2	12x2x1 1/2 10x2x1 1/2	\$26.50
1007	9 1/2	3	14x2x2 12x2x2	34.00
1008	11 1/2	3 1/2	14x2x2 12x2x2	44.00
1009	13 1/2	4	16x2x2 1/4 14x2x2 1/4	56.00
1010	15 1/2	4 1/2	18x2x2 1/4 16x2x2 1/4	73.00

With Side Straps
and Sheaves
Fig. 1006-1010OFFSET MAST TOPS WITH REMOVABLE STEEL
GUDGEONS

No.	Size of Mast inches	Diameter of Gudgeon inches	Price
1012	8	2 1/2	\$12.00
1013	10	3	15.00
1014	12	3 1/2	21.00
1015	14	4	27.00
1016	16	4 1/2	36.00

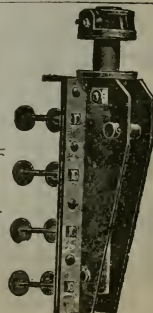


Fig. 1012-1016

PILE DRIVERS

No. 1 STYLE FENCE-POST DRIVER

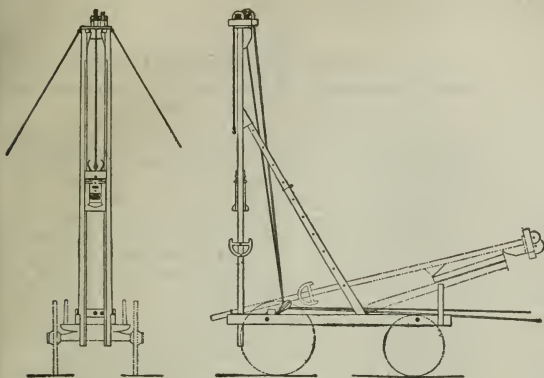
For End Driving

FOLDING LEADERS

This outfit is designed for use with the ordinary farm or mountain wagon, the frame work of the driver being arranged to set on the wagon bolsters between stakes. The leaders are placed sufficiently to the rear to admit of backing up to an existing fence, as would be required in repair work. When building new fence the wagon is simply taken along the proposed line, leaving the fence behind it.

The hammer is raised by horsepower direct, an extra horse being used solely for that purpose.

The leaders and back braces are provided with hinge joints to admit of folding down over the wagon when going to and from the work—the



down position being shown in the cut by dotted lines. The leaders are 20 feet high.

A full set of iron work consists of 600-lb. drop hammer with triangular die; nippers with block; one pair of top sheaves, shafts and boxes with bolts; one pair No. 1 toggles, with bolts; one pair No. 2 toggles, with bolts; 4-inch channel iron liners, with bolts; one pair of heavy forged hinges, with bolts, for foot of leaders; one pair of locking devices for back braces, including working drawings of wood work when desired. The three pairs of hinges on back braces are the ordinary 12-inch strap hinge.

The outfit can also be furnished complete, with all framework, ready to attach to wagon.

No. 2 RIGID LEADERS FOR SIDE DRIVING

Some people prefer this form of post driver for the reason that as the driving is done at the side of the wagon there obtains an especial facility for replacing old posts. The framework is arranged to rack in and out on top of the wagon, being racked out to drive the post and racked in again to enable the wagon being drawn straight ahead, clear of and past the post. The leaders are 20 feet high. They may be mounted at any time on either side of the wagon. A special, wide-track wagon is required for this outfit—7-foot track being preferable. A full set of iron work consists of a 600-lb. drop hammer with triangular die; nippers, with block; one pair of top sheaves, shafts and boxes with bolts; one pair of No. 1 toggles, with bolts; one pair of No. 2 toggles with bolts; 4-inch channel iron liners, with bolts, and the racking-out device complete, with shaft, cranks, pinion, gears, racks, boxes and ratchets, with bolts for holding in place, together with drawings for wood work when desired.

This outfit can also be furnished complete, with or without wagon, and including wood work.

PRICE

	No. 1	No. 2
Iron work only.....	\$190.00	\$280.00
Wood work only.....	142.00	170.00
Lines and Blocks.....	32.00	34.00
Total	\$364.00	\$484.00
Hand Winch for either form.....		\$70.00

Price on Special Wagon for No. 2 form on application.

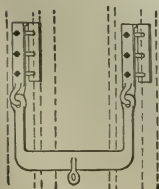
For belt driven Friction Hoist see index.

DROP HAMMER STOP

PRICE

All forged—no castings used, dropped to form a stop, or rest, and pulled back to allow hammer to operate.

1,000 to 1,200-lb. Drop Hammer.....	\$21.00
1,500 to 1,800-lb. Drop Hammer.....	24.00
2,000 to 2,500-lb. Drop Hammer.....	27.00
3,000-lb. and upward.....	35.00
No. 1 Steam Hammer.....	35.00
No. 2 Steam Hammer.....	27.00
No. 3 Steam Hammer.....	24.00



PILE DRIVERS

TOWNSHIP PILE DRIVERS

Usually Operated by Horse-Power, for Hammers that Weigh from 500 to 1200 Lbs.

In order to meet the demand for a Pile Driver for use on small bridges and other light driving, at reasonable cost, we will furnish them as represented in the engraving. We have them in different capacities, from 500 lb. hammer up to 1200 lbs.

The hammer is usually raised by horse-power, the smaller sizes being hoisted direct, that is, without a purchase block, and the larger sizes have one end of the line fastened to a suitable post, driven into the ground, while the other end is passed through a table-block which is fastened to the main hoisting line and leads to the whiffletree direct. Sometimes contractors use a winch, which is bolted to the ladder. It, of course, will do the work, but is very slow. A belt-driven hoist (see index), can also be applied. Tackle-blocks can also be used, instead of sheaves at top and bottom, on smaller sizes, when so desired. (See index.)

The Pile Driver complete, in addition to the iron work below, consists of the framing as shown, fastened together with bolts so as to be readily taken apart for transportation, having turned ladder rungs, turned maple rollers, and a nipper block, but not including lines or adjustable trip. Prices include painting and delivery on car, "knocked down," Chicago.

A full set of iron work usually consists of a hammer with steel die fitted in, nippers, top sheaves, shafts, boxes and bolts, one pair of No. 1 toggles with bolts, one pair No. 2 toggles with bolts, channel-iron liners, with bolts and washers, together with working drawings of wood work when desired. Snatch-blocks at bottom, we think, are preferable to fixed sheaves for horse-power.

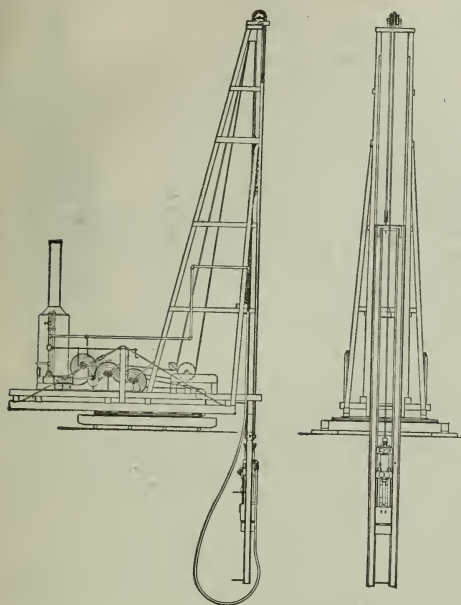
TOWNSHIP PILE DRIVERS, COMPLETE

Omitting Lines and Blocks

Size of Driver Pounds	Distance between Jaws of Hammer, inches	Width of Jaws of Hammer, inches	Hammer with Steel Die fitted in	Forged Nippers	Two Top Sheaves, Shafts, Boxes and Bolts	Height of Leaders feet	Length of Channel- Irons, feet	Channel-Iron Liners, including Bolts and Washers.	One Pair No. 1 Toggles, with Bolts	One Pair No. 2 Toggles, with Bolts	Total Price of Iron Work	Wood Work, complete	Total Price of Pile Drivers without Lines and Blocks
500	13	4 1/4	\$33.00	\$21.50	\$10.50	24	23	\$30.82	\$ 9.50	\$ 4.00	\$109.32	\$170.00	\$279.32
600	13	4 1/4	39.00	21.50	10.50	24	23	30.82	9.50	4.00	115.32	170.00	285.32
700	14	4 1/4	23.00	21.50	10.50	26	25	33.50	9.50	4.00	124.00	200.00	234.00
800	14	4 1/4	51.00	21.50	10.50	26	25	33.50	9.50	4.00	130.00	200.00	330.00
1000	16	5 1/4	58.50	32.00	14.90	28	26 1/2	41.34	14.50	5.50	166.74	230.00	396.74
1200	16	5 1/4	69.50	32.00	14.90	28	26 1/2	41.34	14.50	5.50	177.74	203.00	407.74

FOR ROLLERS, JACKS AND BARS, SEE INDEX

PILE DRIVERS



SWIVELING PILE DRIVER

Arranged With Telescope Leaders

For driving below reach of rigid leaders, in trenches, dams, caissons, foundations, etc.

The telescope leaders are raised and lowered by a separate line, hence adjustable to depth desired.

The combination of swiveling driver rollers (which allow moving fore and aft and sideways) and the telescope leaders, makes a highly efficient machine—especially if a steam hammer be used. When work suitable is extensive enough to warrant, we think one of these machines will be found to be a good investment.

SWIVELING PILE DRIVERS, COMPLETE

Omitting Lines and Blocks

Size of Driver, Pounds	Distance between Jaws of Hammer, inches	Width of Jaws of Hammer, inches	Hammer with Steel Pin fitted in	Top Sheaves, Shafts, Boxes and Bolts, Solid Boxes	Bottom Sheave, Shaft, Boxes and Bolts	Height of Leaders, feet	Length of Channel-Iron feet	Channel-Iron Liners with Bolts and Washers	One Pair of No. 1 Toggles and Bolts	One Pair of No. 2 Toggles and Bolts	Diameter of Turntable, feet	One No. 1 Turntable Outfit	Two Turnbuckle Rods, Washers, Post Caps and 1 set Long Through Rods for Bed Frame and Slings	Total Price of Iron Work	Wood Work, complete	Will fit Steam Hammer	Total Price for complete driver with outfit, lines, Blocks or Engine
1,500	18	6 1/4	\$76.70	\$14.90	\$17.00	38	35 1/2	\$65.32	\$17.50	\$7.20	10	\$276.00	\$80.00	\$554.62	\$600.00	No. 3	\$1,154.62
1,800	18	6 1/4	91.00	14.90	17.00	38	35 1/2	65.32	17.50	7.20	10	276.00	80.00	568.92	600.00	No. 3	1,168.92
2,000	19	7 1/4	100.50	19.80	23.00	45	42	94.92	17.50	7.20	12	288.00	98.00	648.92	1,040.00	No. 2	1,688.92
2,500	19	7 1/4	124.20	19.80	23.00	45	42	94.92	17.50	7.20	12	288.00	98.00	672.62	1,040.00	No. 2	1,712.62
3,000	20	8 3/4	134.00	19.80	23.00	60	57	148.20	22.00	9.00	16	310.00	116.00	782.00	1,700.00	No. 1	2,482.00

When a Pile Cap is used with Drop Hammer, Toggles are not required.

In case a Steam Hammer is to be used, omit Drop Hammer and Toggles.

For Hoisting Engine and Piping to connect to Steam Hammer Hose, see index.

On larger sizes of Leaders freight rates for long distances are liable to be prohibitory.

Telescope Leaders: Prices on application. Please send full particulars.



WARRINGTON IMPROVED STEAM PILE HAMMER

Its chief characteristics are:

First—A very simple and positive valve gear.

Second—A short steam passage, avoiding waste of steam.

Third—Quick, and wide opening of exhaust, avoiding back pressure during the drop (a very important matter).

Fourth—Turned columns connecting the cylinder and base, and serving to guide the ram. The guide holes in the ram are accurately bored by the use of a "jig," and unfair strains on the piston rod are avoided.

Fifth—The piston is forged on its rod. Channel bars are attached on each side to enable the hammer to drive below the bottom of the leaders.

The slide bars are now made with improved fastening in ram and of forged steel, instead of steel castings as heretofore.

Every improvement suggested by an experience of nearly forty years in the manufacture of three distinct forms has been made upon these hammers to produce a simple and thoroughly reliable machine, easy of operation and free from vexatious breakdowns.

The action is regular and continuous. Any kind of pile can be used, hard or soft, straight or crooked, and driven without injury to the head of the pile, in the hardest kind of driving, sand or hard pan. The most ordinary kind of timber, such as spruce, bass and pine, can be thus driven without the use of bands.

The hammer is operated by being raised in the leaders (the only duty of the engine aside from hoisting the pile) and allowed to rest its full weight upon the pile. Steam is turned on and the hammer pounds automatically until the pile is driven to the required depth.

We furnish with each hammer:

A steam hose of the best quality manufactured. For the No. 0 size, 50 feet of 2½ inch 8 ply; for the No. 1 size, 40 feet 2 inch 6 ply; for the No. 2 size, 35 feet of 1½ inch 6 ply; for the No. 3 size, 30 feet 1½ inch 5 ply, and for the No. 4 size, 25 feet 1 inch 5 ply. It is advisable for the purchaser to wrap the hose to prevent chafing. The hose is fitted with specially heavy shanks, rings and nipples, and forged clamps. These parts specially manufactured as they require to be much heavier than those ordinarily sold by dealers in brass goods.

An eye-bolt to insert in piston head, to draw it out when needed, a cylinder cock, hose spanner and wrenches.

The No. 0 is used for 18 inch and 20 inch wooden piles and for 16 inch to 20 inch square or round concrete piles. In driving these latter a cast steel driving head should be used, as it holds a wooden block to receive the impact of the hammer.

The No. 1 is used for 14 inch to 16 inch wooden piles and for general foundation work.

The No. 2 is used for 12 inch and 13 inch wooden piles and for general railroad work.

The No. 3 is used for 9 inch to 10 inch wooden piles and largely for wooden sheeting.

The No. 4 is used for driving fish stakes for pond nets along the shore and in connection with sheet-piling for small wooden sheeting.

For driving steel sheeting all the hammers are used with sheeting caps.

We can furnish these hammers with three different forms of bases, all of which are interchangeable.

1. The regular, or solid form, which has a conical recess to fit over and rest on the head of the pile and which is used for all ordinary requirements in driving, and in connection with sheeting caps.
2. The open end base for sheet piling.
3. A special form known as the McDermid base, from its patentee.

All hammers are fitted with the regular base, unless otherwise ordered.

The open end base can be fitted to the No. 1, 2, 3 and 4 sizes.

The McDermid base is made for the No. 1 and No. 2 sizes of hammers only.

We list below the five sizes we furnish, with the leading dimensions:

TABLE OF WARRINGTON STEAM PILE HAMMERS

No.	Shipping Weight lbs.	Length feet	Diameter Cylinder inches	Normal Stroke inches	Weight of Striking Parts	Distance Between Jaws	Width of Jaws	Horse Power Usually Required
0	16000	15	16½	48	7500	26	9½	60
*1	10150	13½	13½	42	5000	20	8½	40
*2	9850	13	13½	42	5000	20	8½	40
2	6800	12	10½	36	3000	19	7½	25
3	6500	11½	10½	36	3000	19	7½	25
3	3800	9½	8	30	1800	18	6½	18
4	1350	7	4	24	550	14	4½	8

*McDermid base.

List Price of Steam Pile Hammers (Including Hose and Fittings)

Size	With Solid Base	With Open End Base	With McDermid Base
No. 0	\$2400.00	.....	.....
No. 1	1550.00	\$1590.00	\$1650.00
No. 2	1120.00	1150.00	1220.00
No. 3	760.00	790.00	.....
No. 4	480.00	500.00	.....

PILE HAMMERS

No. 5 STYLE

SHEETING HAMMER FOR STEAM OR AIR

For Driving Wooden Planking and Steel Sheet Piling

Constructed on the style of the air drill (double-acting), with heavy base to rest on pile.

Very efficient on sewer work and coffer-dams.

Very much superior to hand mauling and drop-hammer driving.

The piston and ram are of steel, forged in one piece. The piston rings are of medium steel, cut from the solid.

The base of the hammer is hollowed out to receive the striking bar. This latter is a forging, with a tee-shaped head at bottom, to rest upon the pile, and upon the upper end of which the ram delivers its blow. This striking bar is made in such a manner that while it is free to travel down some distance with the pile when struck, still it cannot drop out of the machine.

In operation the hammer is suspended from the boom of a derrick or similar device, no leaders being used. The hammer is lowered on top of pile until it rests its full weight upon the striking bar. Steam or air is then turned on, and as the pile and hammer descend the tackle line is slackened off just fast enough to maintain the hammer in a vertical position.

With the hammer are provided the piping shown, throttle-valve and oil cup, with handles for same.

The hose required is 1 inch diameter, four ply.

The cylinder is 4 inches diameter; its stroke from seven to eight inches.

The length of hammer over all is five feet eight inches.

Weight, 700 to 800 lbs.

The jaw in base is four inches wide, three and three-quarters inches deep vertically, and is ten inches long—this being the width of the base casting.

A ten horse-power boiler will supply the hammer with steam.

The number of strokes per minute is about 125.

Steam Sheetting Hammers, No. 5 size, including hose and fittings.....\$240.00
Omitting hose and fittings.....215.00

DROP HAMMERS

We aim to get the best form of hammers suitable for the purpose and have given careful attention to three points, viz:

First—To get as much of the weight in the bottom of the hammer as possible.

Second—To have the hammer as long as the size of the leaders will permit. This gives longer bearing in the guides.

Third—To have as little play as possible between the hammer and the leaders. This is required to obviate as much as possible the jar on the leaders at the time of striking the pile.

Instead of the old-fashioned strap at the top a pin is recessed in the body of the hammer, so as to take advantage of all the height of the leaders possible.

All corners are rounded.

Where Channel Iron Liners are used, one-quarter of an inch play, that is one-eighth of an inch on each side, appears to be sufficient, but where Strap Iron Liners are used, one-half of an inch should be allowed.

Weight of Drop Hammer lbs.	Distance Between Jaws inches	Width of Jaw Channel Iron Liners	Width of Jaw, Strap Liners
500 and 600.....	13	4 1/4	4 1/2
700 and 800.....	14	4 1/4	4 1/2
1000 and 1200.....	16	5 1/4	5 1/2
1500 to 1800.....	18	6 1/4	6 1/2
2000 to 2500 inclusive.....	19	7 1/4	7 1/2
Over 2500.....	20	8 1/4	8 1/2

Drop Hammers, 800 lbs. and under.....	per lb.	\$0.03
Drop Hammers, 1000 lbs. and under 1500 lbs.....	"	.02 3/4
Drop Hammers, 1500 lbs. and under 3000 lbs.....	"	.02 3/4
Drop Hammers, 3000 lbs. and over.....	"	.02 3/4

Dies or Pins Extra

Note—Weight will vary 25 to 100 lbs. more or less than ordered weight—depending on size of hammer. We would rather sell by weight, but if certain weight is ordered we will not charge any advance, if in excess. In figuring be careful to include Die or Pin as required.

Dies or Pins

Weight	Steel Triangular Die Fitted in Hammer	Steel Turned Pin in Fitted Holed Hole	Rolling Triangular Die
800 lbs. and under.....	\$1.50	\$1.75	\$2.75
1000 and under 1500 lbs.....	1.75	2.25	3.25
1500 and under 3000 lbs.....	2.75	2.75	3.75
3000 lbs. and upwards.....	....	3.25	4.25

FOR HAMMER LINES, WIRE ROPE AND CHAIN, SEE INDEX



PILE DRIVER FITTINGS

DISHED PILE HEAD CAP

For protecting pile heads. Used with steam pile hammers which are fitted with the regular or cone-shaped base. Not required when hammer has a McDermid base.

This form is preferred by many to a plate with or without a spike hole for nailing on pile.

These are hammered from steel billets.

State size of hammer with which to be used.

Dished Head Pipe Cap, for No. 1 steam hammer.....\$12.00

Dished Head Pipe Cap, for No. 2 steam hammer..... 9.00

Dished Head Pipe Cap, for No. 3 steam hammer..... 7.50

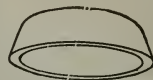


Fig. 21
Dished Pipe Cap

BASES FOR STEAM HAMMERS

Warrington Patent Open End Base

This form has been devised for driving wooden sheet piling, such as is used for trenches and coffer-dams. It is interchangeable with the other two styles of base on any hammer. The recess is rectangular, slightly tapering toward the bottom, and one end is left open to permit of driving all piles to the same level.

The greatest thickness of pile for which the base can be made is as follows:

No. 1 hammer	9½ inches
No. 2 hammer	9 inches
No. 3 hammer	7 inches
No. 4 hammer	5 inches

When ordering specify the outside rectangular dimensions of pile and state whether open end is to be toward or away from the driver. See table below for prices.

McDERMID PATENT BASE

This base, designated B in the illustration, is interchangeable with the regular or solid base, the only difference being that in this a recess is provided in which is placed a steel plate, D. This plate rests on the pile and on it the driving is done; it is inserted through an opening in the side of the base, which opening is covered with a door, E, held in position by a bolt through lugs, C.

This form of base is exceedingly advantageous and desirable when the pile is soft, when the driving is very hard and an excessive number of blows is required to be given a pile. In addition to this, the plate forms a stop, bringing the pile to the proper point and preventing piles smaller than the opening from coming through.

PLATES FOR McDERMID PATENT BASES

(McDermid Plates or Beater Plates)

The McDermid base is now made for the Nos. 1 and 2 sizes of steam hammers.

We furnish two kinds of plates, one of hammered mild steel, of which we carry a large stock, and the other of cast manganese steel, which we can furnish to order. They are 1¾ to 1½ inches thick for the No. 1 hammer, and 1½ to 1¼ inches thick for the No. 2 hammer. The forged plates are machine finished on the edge, the manganese plates ground; all to proper size.

Most operators prefer the hammered steel plates and owing to the limited demand we no longer maintain a stock of the rolled steel McDermid plates formerly offered.

PRICE FOR STEAM HAMMER BASES

Size	Solid Base	Open End Base	McDermid Base
No. 1.....	\$100.00	\$140.00	\$160.00
No. 2.....	90.00	120.00	150.00
No. 3.....	75.00	84.00	.....
No. 4.....	27.00	48.00	.....



Fig. 120
Open End Base

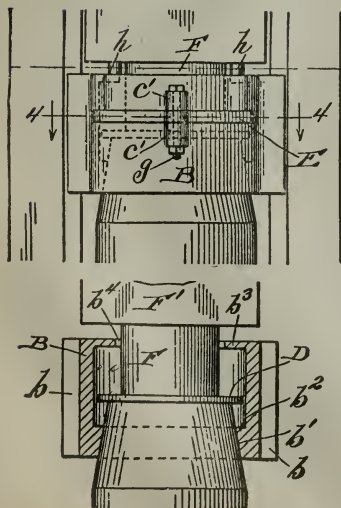


Fig. 20
McDermid Base

OUR STOCK OF PILE DRIVER EQUIPMENT IS ALWAYS COMPLETE

PILE DRIVER FITTINGS

THE PERFECT HEAD-BLOCK FOR
PILE DRIVERS
LINDSLY'S PATENT

Fig. 0

This is a development of long experience with the troubles incident to the ordinary headgear arrangement of pile drivers, and has been found extremely satisfactory in actual use.



Figs. 1 and 2

It is complete and self-contained; can be bolted down on the driver frame in a few minutes, and, being built on the interchangeable system, any part meeting accidental damage can be readily replaced.

It is durable and easy-running, as the sheaves are fast on steel shafts running in babbitted boxes.

The inclined guide rollers permit the pile line to lead out in any direction without extra friction or wear, and the entire Head-Block is so constructed that the lines cannot run against any sharp angles, nor can they be displaced from the sheaves in service.

The Head-block is now made in three sizes:

The No. 0, special, for No. 0 steam hammer only, which hammer weighs 16,000 lbs.

The No. 1, for drop hammers of 2,000 lbs. weight and over.

The No. 2, for drop hammers of 1,800 lbs. weight and under.

The Nos. 1 and 2 are the sizes ordinarily used, and as the hoisting line falls centrally in the leaders they are especially suitable for drop hammers. They can, of course, be used with steam hammers also, but when the hammer is raised to the top of the leaders the line will not be entirely fair. This can be partially avoided by moving the Head-block forward.

SIZES OF SHEAVES AND LINES

Size	Hammer Sheave	Hammer Line		Pile Sheave	Pile Line		Price Each
		Wire	Manila		Wire	Manila	
No. 0.....	16 inches	$\frac{3}{4}$ inch	... ..	12 inches	$\frac{3}{4}$ inch	1 $\frac{1}{2}$ inches	\$160.00
No. 1.....	16 inches	$\frac{3}{4}$ inch	2 inches	12 inches	$\frac{3}{4}$ inch	1 $\frac{1}{2}$ inches	115.00
No. 2.....	12 inches	$\frac{3}{4}$ inch	1 $\frac{1}{2}$ inches	9 inches	$\frac{5}{8}$ inch	1 $\frac{1}{4}$ inches	93.00

The sizes of lines given above are the largest which the sheaves will accommodate; smaller lines can, of course, be used.

In ordering specify size of head-block and state whether sheaves are required, one or both, for wire or manila rope.

TOGGLE IRONS



Fig. 1

Weight of Drop Hammer Lbs.	No. 1 Toggles Opening Inches	No. 2 Toggles Center of Leaders to Hook Inches	No. 1 Toggles and Bolts, per pair	No. 2 Toggles and Bolts, per pair
500 to 800..	13	6 $\frac{1}{2}$	\$9.50	\$4.00
1,000 to 1,200..	18	9	14.50	5.50
1,500 to 2,500..	22	11	17.50	7.20
Over 2 500.....	26	13	22.00	9.00



Fig. 2

ROLLER SPOOLS AND AXLES

Spool machine-finished; to run on 10 inch wooden or 10 inch iron pipe roller. We furnish also the 10 inch oak rollers 26 feet and under, banded on ends and drilled for crow-bar. Four roller spools and two oak rollers make one set.

Fig. 1. Square Shaft
Roller Spool and Axle—

No. 1—Per set of 4	\$140.00
No. 2—Per set of 4, for 2,000-2,500 lb. drop hammer or No. 2 steam hammer.....	150.00
No. 2—Per set of 4, for 3,000-3,500 lb. drop hammer or No. 1 steam hammer.....	330.00

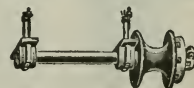


Fig. 2. Round Shaft

FOR AXES, CANT HOOKS AND SLINGS, SEE INDEX

PILE DRIVER FITTINGS

THOMAS A. KEARNS'

PATENTED

PIPE PILE FOLLOWER

For Driving Piles Below the Surface of the Ground



This consists of a cast iron cap, "C," in which is a recess to receive the pile, and a wrought iron pipe, "B," of the length to suit the depth required. This pipe is cast into the follower cap. It was found that fastening by bolts was very insecure. The pipe is filled by a turned oak timber, which we provide, but to be hammered in by the operator. A heavy hammered iron band, "H," is shrunk on to the pipe, leaving a recess of about $1\frac{1}{2}$ inches to receive a short block, "I," having a hammered iron band, "K." A small hole, "L," is drilled in the bottom of the pipe to allow air to escape while the timber is being driven in. Two steam pipes run down either side to release the follower from the pile. These pipes are fitted by unions to the nipples which are cast into the follower cap, and held to the pipe by staples driven through the pipe into the wood.

The great advantage of this follower becomes apparent in sticky soils, when the driving is below the surface of the ground, as by means of the small pipes steam or air under pressure may be introduced on top of the driven pile when it is desired to withdraw the follower, thus much facilitating an oftentimes difficult operation.

We furnish this in two sizes of pipe—10 inch and 12 inch, extra strong—of length to suit the work. The smaller is for piles from 10 to 14 inches diameter, and the larger for piles 14 to 18 inches diameter.

Price on application—governed entirely by market price of pipe.

FOLLOWER CAP

In foundation work piles are required to be driven below the surface, sometimes 20 feet. When driven to the end of the leaders a follower has to be used for the remaining distance. The Follower Cap here shown is recessed on the bottom, the same as the pile cap, to fit over the pile. In its upper end the operator inserts and bolts a pile of the requisite length, with its upper end trimmed to fit into the pile cap or steam hammer. We make this in two sizes; the A size is for piles up to 12 inches diameter. The upper recess is for a 12 inch diameter Follower, and is 6 inches deep; the casting is 12 inches long over all. The B size is for piles up to 16 inches diameter; the upper recess is for a 14 inch diameter Follower and is 8 inches deep; the casting is 15 inches long over all. Bolts are included.

Fig. 1:

Size A. 12 inches diameter.....\$25.00

Size B. 14 inches diameter.....33.00

OPEN END FOLLOWER CAP No. 2

This is for driving wooden sheeting. When ordering specify the outside rectangular dimensions of pile.

Fig. 2: Single Open End Follower Cap—

For 2x 8 or 10 sheeting, 8 inch diameter follower.....\$ 8.00

For 3x10 or 12 sheeting, 8 inch diameter follower.....9.00

For 4x10 or 12 sheeting, 10 inch diameter follower.....13.50

For 6x10 or 12 sheeting, 10 inch diameter follower.....15.00

For 8x10 or 12 sheeting, 12 inch diameter follower.....25.00

For 10x10 or 12 sheeting, 12 inch diameter follower.....27.00

Pile Cap for Wooden Sheet Piling, including block, band and pins for hammer.....76.00

Same for steam hammer.....80.00

RIGID ROLLER BEARINGS

These are plain castings to take the place of the spool rollers. Instead of rolling they slide on the long rollers. With pipe rollers they are also satisfactory. This pattern is for 10 inch pipe about $10\frac{1}{4}$ inch diameter, and also for 10 inch diameter oak roller. Specify when ordering which is to be used.

Rigid Roller Bearings.....per set of 4 \$46.00

Each.....11.50

FOR WIRE ROPE, BOLTS, BLOCKS, ETC., SEE INDEX

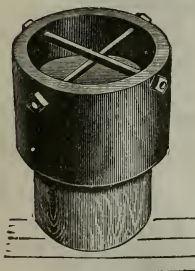


Fig. 1



Fig. 2



Fig. 3

PILE DRIVER FITTINGS STANDARD SHEAVES

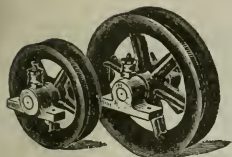


Fig. 1

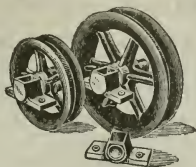


Fig. 2

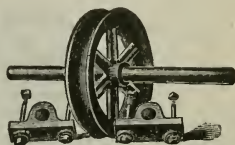


Fig. 3

Our sheaves are made from new patterns, grooves smoothed out, and pressed tightly on shafts, as it has been found advisable to put the wear on bearings. The "Top Sheave" boxes are made in two styles: **First**—Solid, bored out, with oil holes on top. Some people like grease cups or oil cups, screwed into these oil holes to save trouble of going up and down too frequently. **Cups are an extra charge, see index.**

Second—Open, to receive oiled waste, as shown in cut, babbitted on lower half. The "Bottom Sheave" runs loose on shaft, which extends from sill to sill, to allow of a lateral movement between the sills to accommodate the rope as it winds on the hoisting drum. It may be provided with a wooden box, or housing, to prevent the line from jumping off when slack.

We can furnish, from stock, any of these sheaves for wire rope, of approximately the same diameter as specified for manila rope and at the same prices.

DIMENSIONS OF STANDARD SHEAVES AND SHAFTS FOR EITHER WIRE ROPE OR MANILA LINE

	500 to 800 lb. Hammer	1000 to 1800 lb. Hammer	2000 lb. Hammer and Over
Bottom Sheave.....	12 inch.....	16 inch.....	20 inch.....
Bottom Sheave Shaft.....	9 inch..... $2\frac{1}{8}$ inch	12 inch..... $2\frac{1}{8}$ inch	16 inch..... $2\frac{1}{8}$ inch
Hammer Top Sheave.....	9 inch..... $1\frac{1}{8}$ inch	12 inch..... $1\frac{1}{8}$ inch	16 inch..... $1\frac{1}{8}$ inch
Hammer Top Sheave Shaft.....	6 inch..... $1\frac{1}{8}$ inch	9 inch..... $1\frac{1}{8}$ inch	12 inch..... $1\frac{1}{8}$ inch
Pile Line Top Sheave.....	6 inch..... $1\frac{1}{8}$ inch	9 inch..... $1\frac{1}{8}$ inch	12 inch..... $1\frac{1}{8}$ inch
Pile Line Top Sheave Shaft.....	6 inch..... $1\frac{1}{8}$ inch	9 inch..... $1\frac{1}{8}$ inch	12 inch..... $1\frac{1}{8}$ inch

All Sheaves are measured at the bottom of the groove and have specially deep flanges. They are designed for this service and are more substantial than sheaves ordinarily sold.

Weight of Drop Hammer	Fig. 1 Top Sheaves Shafts Boxes and Bolts per set Solid Boxes	Fig. 2 Top Sheaves Shafts Boxes and Bolts per set Babbitted Boxes	Fig. 3 Bottom Sheaves Shafts Boxes and Bolts Without Housing
500 to 800 lbs.....	\$10.50	\$13.00	\$12.00
1000 to 1800 lbs.....	14.90	17.50	17.00
2000 lbs and over.....	19.80	23.00	23.00

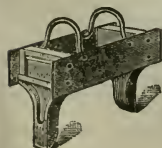
NIPPERS

The general use of friction engines for driving piles has done away, to a large extent, with the demand for Nippers. The larger sizes are seldom called for. We have added to our list a smaller size for very light hammers. These Nippers are forged out under a steam hammer, and have machine finished hinges and hardened steel points. The arms are set to suit width between the leaders, which should be sent us.

The Nipper Blocks are of oak, well bolted.



With Block



Without Block

	Nippers	Blocks
No. 1 Nippers, for hammer 2500 lbs. and over.....	\$50.00	\$9.50
No. 2 Nippers, for hammer 1800 to 2200 lbs.....	40.00	8.50
No. 3 Nippers, for hammer 1000 to 1600 lbs.....	32.00	7.00
No. 4 Nippers, for hammer 500 to 800 lbs.....	11.50	7.00
No. 5 Nippers, for hammer 300 lbs. and under.....	18.50	6.50

ADJUSTABLE TRIPS

The Adjustable Trip is used for striking light blows, such as needed for a pile of small diameter, or for pile very near its destination. It is raised or lowered in the leaders by means of a small line, with suitable sheave at the top. The sides are of plate iron, the striking plates, at the ends, of cast iron, to give the necessary weight, while the ball is of wrought iron. We furnish them of four sizes, of the dimensions to suit leaders.

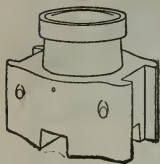
Adjustable Trip No. 1, for hammer 2000 lbs. and over.....	\$20.00
Adjustable Trip No. 2, for hammer 1500 to 1800 lbs.....	18.00
Adjustable Trip No. 3, for hammer 1000 to 1200 lbs.....	16.00
Adjustable Trip No. 4, for hammer 500 to 800 lbs.....	12.00

FOR WIRE ROPE, BLOCKS, AXES, ETC., SEE INDEX

PILE DRIVER FITTINGS

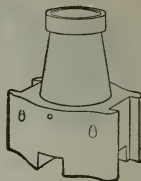
DRIVING BLOCKS

Turned from Black Gum Logs for Pile Caps and Sheeting Caps



For several years we have been furnishing white oak for making driving blocks, but have experienced considerable trouble, and frequent loss, from checking of the timber and blocks; besides we have had trouble at times in getting the material.

Black Gum does not appear to check, even when kept in a dry room, in fact, it seems to be the ideal wood for this purpose.



We have had two comparative reports only, as follows: U. S. Reclamation Service, Putnam, Montana, L. V. Branch, Engineer: "The five Black Gum cushion blocks shipped us were most excellent blocks. Any one of these five blocks was the equal of the very best oak block and did the same service as two of the poorer oak blocks. The Black Gum blocks were more uniform in quality than the oak blocks and as an average I would estimate that two Black Gum blocks were equal to three oak blocks." James Black Masonry & Contracting Co., St. Louis, Mo.: "The oak cushion blocks stood (12) feet of driving; that is, one pile driven 12 feet. The Black Gum cushion blocks lasted for 7 piles at a depth of 35 feet each or 245 feet of driving."

Many contractors use waste ends of piles, which, of course, is the cheapest way to do where piles suitable for the purpose are being used, but in many parts of the country where timber is very poor, these blocks may be found a good purchase. We heretofore have aimed to sell blocks only in connection with caps, that is, sending one out with each cap, but are now offering them for regular use.

PRICES

Short blocks for drop hammer.....	each	\$2.70
Long blocks for No. 1 Warrington steam hammer, about 20 inches long.....	"	6.00
Long block for No. 2 steam hammer, 20 inches long	"	5.00
Long block for No. 3 steam hammer, 15 inches long	"	4.00

PILE PULLER

For Steel Sheet Piling

Made of steel in two sizes.

Gripping cams have hardened tool steel teeth.

The action of pulling increases the grip.

In ordering, give us the make, size and length of pile, also what information you can about the difficulty of driving.

Prices, each

Large	\$120.00
Small	60.00



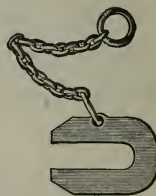
PILE PULLER

For Wood Sheet Plank

Made for 3 inch by 10 inch plank, but can be used for other widths and also for 2 inch planks.

Steel forging with ½ inch chain and ring.

Price, each, 3 inch...\$11.50



PILE LIFTING CHAINS



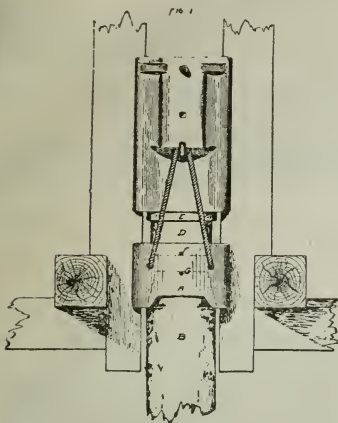
These are for use at end of pile lines, for winding around the pile and taking hold. They are made of different sizes of chain and different lengths. For 2000 lb. to 2500 lb. hammer, ½ inch chain by 8 feet long is a quite popular size.

Care must be taken in ordering not to confuse these with the pile-pulling chains, which, of course, are very much heavier, and with special hammered hooks.

½ inch by 8 feet long.....Price, each \$10.00

Other sizes in proportion.

PILE DRIVER FITTINGS



PATENT CAP FOR PILE DRIVING

Casgrain's

In the operation of pile driving it frequently happens that the piles are either split or broomed on their tops by the concussion of the hammer. The Casgrain Cap overcomes this difficulty.

	Each
Cap, including block, band and pins for hammer . . .	\$76.00
Pile Cap Block, turned oak	3.00
Pile Cap Band, Norway iron	5.00

SHEET PLANK CAPS

Forged Steel

Double open end.
For wooden sheeting.
Made to order for any
sizes required.

	Each
For 2x 6 inch..	\$6.50
For 2x 8 inch..	7.00
For 2x10 inch..	7.50
For 2x12 inch..	8.50

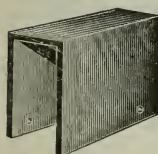


Fig. 211B

PILE BANDS

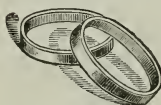


Fig. 211A

All sizes, per lb.. \$0.20

PILE HEAD COVER

Cast Iron

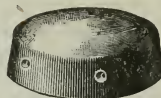


Fig. 211C

11 1/2 inch diameter. each \$1.50
13 1/2 inch diameter. " 1.75

PILE POINTS, OR PILE SHOES

Including Spikes



Fig. 1



Fig. 2



Fig. 3

No. 1			No. 2			No. 3		
Size Inches	Weight lbs.	Each	Size Inches	Weight lbs.	Each	Inches Round	Weight lbs.	Each
4x4	15	\$1.50	9x2 1/2	17	\$1.70	6	35	\$2.30
5x5	20	2.00	9x3	25	2.10	8	78	4.00
6x6	25	2.30	9x3 1/2	33	2.70	10	150	7.00

WE CAN FURNISH ANY KIND OF SPECIAL FORGINGS PROMPTLY

PILE SAW ARBOR

For Cutting off Piles Under Water

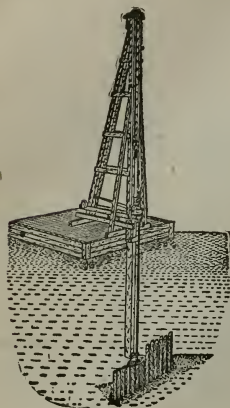


Fig. 727A

As ordinarily used they are made to cut off piles 16 to 24 feet under water. We usually allow for $8\frac{1}{2}$ feet in length above water, to which is added the depth of cut required to get length of Arbor.

The shaft is $3\frac{7}{8}$ inches in diameter and counter-balanced. A 42-inch saw is usually sufficient, but for very large piles this size would have to be increased.

The Arbor works on a spline its entire length, and is readily adjustable to any depth within its range. Side rollers and frames are furnished, to be fastened to the inner side of leaders, for the belt to run on.

The speeds and approximate horsepowers required for different diameters of saws are as follows:

42-inch Saw, 600 R. P. M., 15 to 20 H. P.

48-inch Saw, 525 R. P. M., 20 to 25 H. P.

Price includes the saw, arbor, pulley-bearings, sheaves, swivel-hook, counter-balanced sheaves, side frames and rollers, with necessary bolts to fasten all to woodwork, together with a drawing for the woodwork and fastening in place.

Our regular pile driver engines (see index) can be fitted with an attachment for driving the saw. When this feature is desired we furnish the frame with an extension on the front end to carry an extra shaft, driven by a pinion from the front drum shaft; this shaft carries a pulley in the center of the engine and from which the pile saw arbor may be driven direct.

In ordering, state length required.

Price of outfit depends on the market price of fitting. We will be pleased to quote on application.

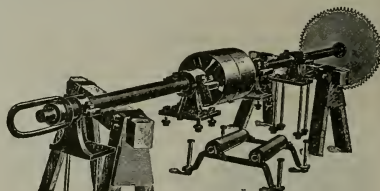


Fig. 727

Fig. 24 POLE PULLER

Fig. 24. Pole-Puller is a new device adopted by the telegraph and telephone companies, effecting on an average, a saving of 75 per cent on telegraph poles.

The method of hoisting is as follows:

The Pole-Puller is used to pull poles that have become decayed just above the ground. The decayed part is cut off and the pole is reset, without moving the pole from the spot or interfering with the wire or service. This gives the poles new life and saves about 75 per cent in maintenance and overhead costs.

It is powerfully geared and is 7 feet high, weight, 140 pounds.

The shaft for cranks measures 19 inches overall from end to end.

Furnished with $1\frac{1}{2}$ -inch tallow-laid manila line, $\frac{1}{2}$ -inch chain, and 2 cranks.

Price, complete.....\$40.00

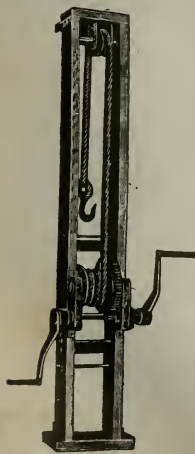


Fig. 24

ATTACHABLE SERGE DRUM OR SPOOL

Fig. 13 Drum illustrated to the right, is used with a long rope to make a high lift, still retaining the full capacity of the windlass or crab.

It is secured by two keys and four bolts and can be attached in a few minutes.

Spool for $1\frac{1}{2}$ -inch to $2\frac{1}{2}$ -inch rope.....\$11.50

Price each.....\$11.50

Spool for $\frac{3}{8}$ -inch to $1\frac{1}{2}$ -inch rope.....\$5.00

Price each.....\$5.00

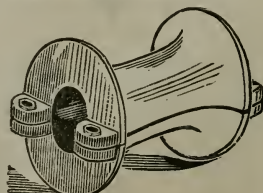


Fig. 13

FOR WIRE ROPE, BLOCKS AND CIRCULAR SAWS, SEE INDEX

BLASTING SUPPLIES

We are large dealers in blasting supplies, and list below a few of the specialties we carry. Our stocks are so situated that we can make prompt shipment of any orders we may receive. Owing to price fluctuations we are unable to quote any list prices in this catalog, but **guarantee lowest market prices on day your shipment is made.**

AETNA DYNAMITE



Fig. 593A

The Standard High Explosive

Packed in 25 lb. and 50 lb. cases.

Shipped by freight only.

Made in grades from 15% to 60% of nitro-glycerin.

Use 40% for stumps, stone and ordinary work.

Use Aetna Gelatin Dynamite for submarine work.

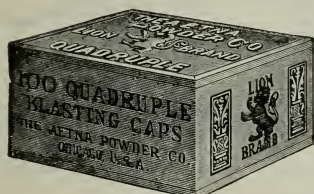


Fig. 593B

BLASTING CAPS

For Exploding Dynamite

Quintuple force.....per 100 \$....
Sextuple force.....".....

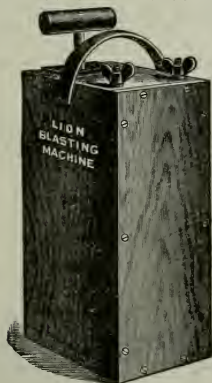


Fig. 593C

LION BATTERIES

For Firing Blasts by Electricity

Lion No. 1. Capacity 8- 10 holes....\$15.00
Lion No. 3. Capacity 20- 25 holes.... 25.00
Lion No. 4. Capacity 30- 50 holes.... 50.00
Lion No. 5. Capacity 50-100 holes.... 75.00

Caps and Lion fuses must be shipped by freight and cannot be shipped with dynamite.


Fig. 593D
FUSE

Single tape.....per 1000 feet \$....
Double tape....." " "....
Anchor brand....." " "....
Triple tape....." " "....

ELECTRICAL FUSES

"Lion Brand"

Double-wound insulation.

Every one warranted perfect.



Fig. 593E

	Standard Strength per 100	Double Strength per 100
4 feet wire.....\$....	\$....	\$....
6 " " " " " " " " " " " "
8 " " " " " " " " " " " "
10 " " " " " " " " " " " "
12 " " " " " " " " " " " "
16 " " " " " " " " " " " "
20 " " " " " " " " " " " "

SUNDRIES

Leading wire, common, 500 foot coil... } At
Aetna cable leading wire, per coil..... } Market
Connecting wire, 1 lb. coils or 2 lb. } Prices
spools, per lb.....
Leading wire reels, each.....\$4.00
Rubber insulating tape, per ½ lb. roll.... .75
Friction tape, per ½ lb. roll..... .50

WRITE US FOR PRICES

DIVING APPARATUS PUMPS

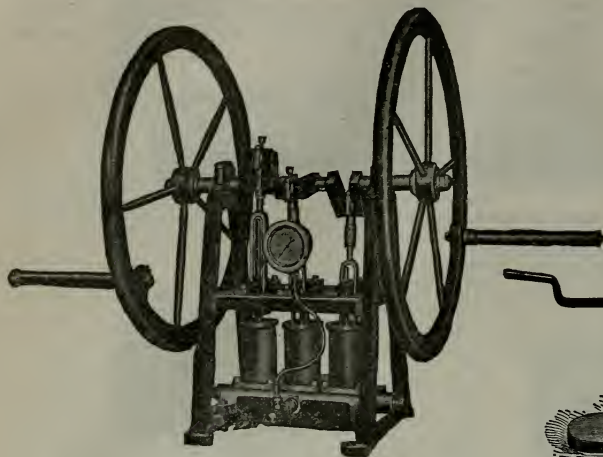


Fig. 5791
Three Cylinder

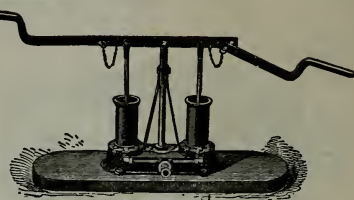


Fig. 5792
Two Cylinder Single Acting

Four styles of Pumps are made as follows:

TWO CYLINDER DOUBLE ACTION PUMP

So constructed that two divers can be supplied with air at the same time or all the air given to one diver if it is necessary to descend to great depths. This pump is the one supplied to the United States Navy Department and placed on all warships.

Price each.....\$500.00

THREE CYLINDER FINE FINISHED PUMP WITH WATER TANK

Designed for one diver and guaranteed to supply him with air at any depth to which he can go. Particularly used for all deep-sea work, sponge and pearl fishing, or where it is necessary for the diver to remain submerged for a long time.

Price each.....\$400.00

THE THREE CYLINDER PLAIN FINISHED PUMP

Designed for one diver and of the same general construction as the fine finished pump. No water tank is attached, nor are the parts so highly polished. This is the standard machine for wreckers, bridge and pier builders, engineers, contractors, steamship companies, etc., and it is guaranteed for depths up to 90 feet.

Price each.....\$250.00

THE TWO CYLINDER LEVEL PUMP WITH EITHER HORIZONTAL OR UPRIGHT HANDLES

Used for examination or other short period diving around waterworks, dry docks, marine railways, dams, docks, breakwaters, where depths do not exceed 30 feet.

Same as furnished with Outfit No. E.....\$75.00

OAK CASE FOR TWO CYLINDER LEVER PUMP

Easily attached to pump furnished with our No. E outfit and adding greatly to its appearance. Special up-right handle in two pieces, also made so as to fit in case. Case is fitted with lock and two handles, and proves of great value if pump is frequently shipped from place to place.

Price each.....\$12.50



Fig. 5793

BELT WEIGHTS WITH SHOULDER STRAPS

To be worn around waist. Weights attached with screws, allowing removal if belt is considered too heavy.

Per set.....\$27.50

A cheaper set furnished with weights riveted to belt.

Per set.....22.00

DIVING APPARATUS



Fig. 5S11. Wading Dress

Fig. 5S12.
Diving Dress

Fig. 5S13. Canvas Dress

Fig. 5S14.
Canvas Chafing
Pants

DIVING DRESS

Furnished in Nos. 1, 2, 3 and 4 sizes for men measuring in height respectively 5 feet 6 inches, 5 feet 8 inches, 6 feet, and over 6 feet. Fitted with pure gum cuffs and gasket. Gasket punched to receive bolts on collar of helmet if so ordered. Guaranteed both air and water tight.

Price, each \$50.00
Extra cuffs, per pair, 5.00

Dresses can also be furnished in above sizes reinforced with an extra layer of canvas on the knees, elbows, shoulders, crotch and feet, at a slightly higher figure.

WADING DRESS

Furnished in the same sizes as Diving Dresses, but with rubber cuffs only. No gasket. Designed to be worn without helmet in water over worker's head. A high cape extends upward and is held by fellow worker who directs operations.

Price, each \$45.00
Extra Cuffs, per pair, 5.00

CANVAS DRESS

Used to protect the entire Diving Dress from wear.

Price, each \$6.50

CANVAS CHAFING PANTS OR OVERALLS

Used to protect the lower portion of Diving Dress from wear, and fitted with straps to cross shoulder-piece of helmet to hold same firmly on shoulder.

Price, per pair \$4.00

RUBBER CANVAS MITTENS

Made of rubber vulcanized between two layers of best grade of canvas per pair \$5.00

BLACK RUBBER MITTENS

Made with black rubber hands, canvas and rubber gauntlets per pair 5.00

CANVAS GLOVES

Two fingers, material similar to our regular Rubber Canvas Mittens; best for rough work, where use of the fingers separately are required per pair 6.00

RUBBER GLOVES

Five fingers, material similar to our regular Black Rubber Mittens; most desirable glove for work where the use of each finger is required

Price, per pair 6.00

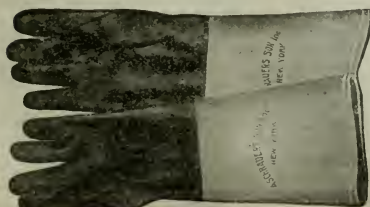


Fig. 5S15. Rubber Gloves, Five Fingers

DIVING APPARATUS

COMPLETE DIVING APPARATUS, No. E.

This outfit for any depth up to 30 feet for one diver. Particularly adapted for water-works, examining ships' bottoms, repairing dams, laying pipes, dock and breakwater building, marine railways, etc.

1 Two Cylinder Air Pump, capacity 30 feet depth of water.....	\$75.00
*1 Improved Quarter Turn Screw Helmet, to receive air in head, or to receive air in breast-plate, either style, including safety valve and adjustable regulating valve 3 lights \$100.00, 4 lights.....	105.00
1 Diving Dress.....	50.00
100 feet Air Hose (two pieces), with couplings.....	40.00
1 set Horse Shoe Weights, complete with ropes.....	15.00
1 pair Diving Shoes, with lead or iron soles.....	15.00
1 pair Wrist Expanders.....	5.00
1 pair Rings and Clamps.....	5.00
1 pair Diving Mittens (rubber or canvas), either style.....	5.00
1 pair Chafing Pants, with adjustable straps.....	4.00
1 Life or Signal Line (100 feet).....	2.00
6 Extra Bolts and Nuts for Helmet (spare).....	3.00
1 pair Extra Couplings (spare).....	2.00
1 yard Rubber Repair Cloth.....	3.00
3 feet Snap Tubing.....	1.80
1 pint can Rubber Cement, for repairs.....	.75
1 Cutting Punch.....	.75
Complete Apparatus.....	\$332.30

	Weight	Dimensions
1 Case.....	360 lbs.	42 in. x 32 in. x 25 in.

*Bolt Helmet may be substituted at \$25 additional cost.

Any article in above list not desired may be omitted, or additions of any separate parts, as shown on these pages, be made, with corresponding change in cost of outfit.

HELMET WITH TELEPHONE AND CABLE



Fig. 5821. Helmet, with Telephone and Cable

Particular attention is called to the cup into which the telephone cable leads and which contains both receiver and transmitter, neither of which projects into the Helmet. In the old style telephones the receiver and transmitter were fastened to the inside of the head piece and caused projections against which the head of the diver frequently struck. The telephone is also so arranged that it can be removed from the head piece without the disconnection of a single wire. This is often found necessary where work is to be done in narrow places, cribs, etc., where the carrying of the extra surface connecting line would be dangerous. The hole through which the telephone is removed can be closed with a cap furnished, and Helmet used in the regular way.

Bolt Helmet complete with telephone, batteries, cable, etc.....	\$225.00
Screw Helmet complete with telephone, batteries, cable, etc.....	200.00

DIVING APPARATUS

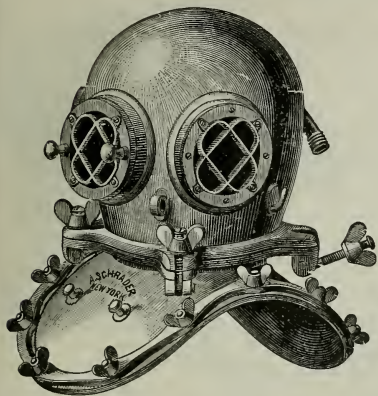


Fig. 5831, Bolt

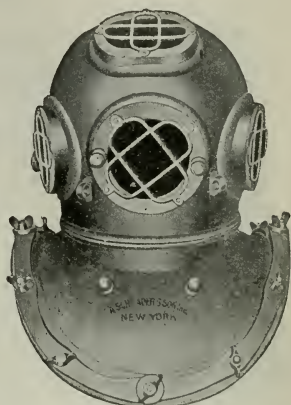


Fig. 5832, Screw

HELMETS

Are furnished in either Bolt or Screw style with three or four windows and a choice of Regulating Escape Valve or Inside Push Button release. All Helmets are designed to fit without causing unnecessary pressure on the chest. The head pieces are made from a one-piece copper shell to which all fittings are riveted before they are brazed in. The Collars are also made in one piece and the strap which is brazed around the outer edge (to take the bolts for the dress) is also made of one piece, thus making it impossible for the bolts to split the strap from the shoulder form. Every article on the Helmets is thoroughly tested and nothing passed which is not perfect.

Improved Quarter-turn Screw Helmets, 3 lights.....	each	\$100.00
Improved Quarter-turn Screw Helmets, 4 lights.....	each	105.00
Improved Bolt Helmet, 3 lights.....		125.00
Improved Bolt Helmet, 4 lights.....		130.00

Either style furnished with three or four windows and to receive air in head or neck as desired.

DIVING SHOES



Fig. 5833

No. 5833. Made from best grade leather, with cast iron or lead soles. Per pair.... \$15.00

No. 5834. Made from best grade leather, with cast bronze soles and toe caps. Per pair \$18.00



Fig. 5834

No. 5835. Cast iron Sandals with straps, New York Department Docks and Ferries style. Per pair..... \$8.00



Fig. 5836

No. 5836. Canvas Chafing Shoes worn with sandals or other shoes to protect feet of dress from wear. Per pair \$4.00



Fig. 5835

DIVING APPARATUS

EXTRA HELMET FITTINGS

Safety Valve	\$ 3.00
Regulating Escape Valve	6.00
Springs for Helmet Valves, each .....	.10
Leather Gasket for Neck Screw-Joint	1.50
Flanges for securing dress to Helmet Breast Plate, per set (four sections)	10.00
Face Plate, screw frame, complete	7.50
Leather Gasket for Face Plate .....	.50
Glass for Helmet, round .....	.50
Glass for Helmet, oval .....	.75
Bolts for Breast Plate, each .....	.25
Wing-Nuts for Breast Plate, each .....	.25
Tee Wrench for tightening wing-nuts on Helmet Breast Plate	1.25
Spanner Wrench for tightening wing-nuts on neck joint of Bolt Helmet	1.00

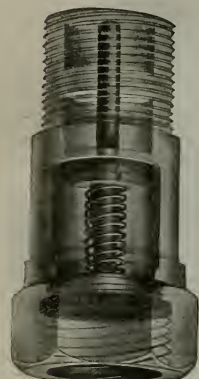


Fig. 5841. Safety Valve

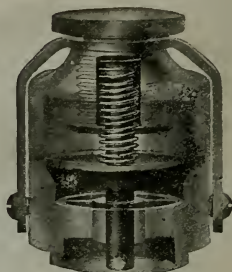


Fig. 5842. Regulating Escape Valve

REPAIR PARTS



Fig. 5843

Rubber Cloth for patching Dress or Mittens. Per yard, black	\$2.50
White	3.00
Cement for patching Dress or Mittens (instructions on can). Per pint .....	.75
Bolts and Nuts for Helmet Collar to replace those worn, broken or lost. Each .....	.25
Couplings for replacing those on hose in case of accident. Per set	2.00

Snap Tubing, used for making a water tight joint at the wrist. Usually cut into 2 inch strips. Per foot .....	.60
Improved Urinal, each	3.50



Fig. 5844

CUFF EXPANDERS

Used to stretch rubber cuffs on Diving Dress so as to allow entrance or withdrawal of hand.

Per pair\$5.00



Fig. 5845

HORSE SHOE WEIGHTS

Worn one each on chest and back of diver, suspended by ropes passed over Helmet Collar.

Per pair\$15.00



Fig. 5846

RINGS AND CLAMPS

Per pair\$5.00

DIVING APPARATUS

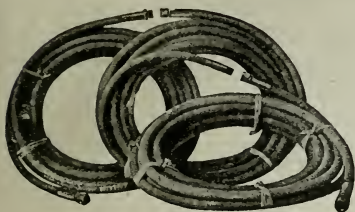


Fig. 5801. Diving Hose

SPECIAL DIVING HOSE

- Standard air hose, coupled.
Per 50-ft. length.....\$20.00
- Standard floating air hose, coupled.
Per 50-ft. length.....\$50.00



Fig. 5802

KNIFE BELT WITH FAIRLEADER FOR HOSE

A heavy leather belt with steel knife screwed into a brass case. A ring on belt is designed to allow hose to pass through in carrying same under left arm before connecting to helmet.

Complete.....\$10.00

ELECTRIC LIGHT

A 100 candlepower lamp enclosed in a water-tight glass case with vibratory spring and ring for lashing. Complete with 100 feet of best cable and plug for insertion in electric socket.

Each.....\$60.00
(Give voltage of system when ordering.)

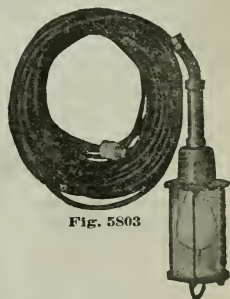


Fig. 5803

CRINOLINE

A cloth covered rattan frame with shoulder straps worn under the diving dress in very deep water. Designed to prevent pressure on the abdomen.

Each.....\$8.50



Fig. 5804

HELMET CUSHION

To be worn over shoulders inside the dress to prevent chafing of helmet collar and to ease weight.

Each.....\$3.00



Fig. 5805

BASKET

Designed to hold complete outfit, except pump, with specially constructed place inside for hose, weights, shoes, etc. Convenient for shipping goods from place to place.

Each.....\$18.00



Fig. 5806

ICE TOOLS

MARKER WITH SWING GUIDE
Weight, Complete with Case, 145 lbs.



Fig. 359

No. 355—4-inch Markers, 11 cutting teeth, with 22-inch Swing Guide, complete.....each \$58.00
No. 356—4-inch Markers, 11 cutting teeth, with 22-inch and 32-inch Swing Guides.....each 66.00
No. 359—4-inch Markers, 11 cutting teeth, with Patent Extension Swing Guide, 22 by 32 in..each 61.00

PLOWS

No. 374—8-inch, 8 cutting teeth, weight 115 lbs.....each \$50.00
No. 275—8-inch, 7 cutting teeth, weight 115 lbs.....each 48.00
No. 376—9-inch, 7 cutting teeth, weight 120 lbs.....each 51.00
No. 377—10-inch, 6 cutting teeth, weight 125 lbs.....each 53.00



Fig. 374

SAWS

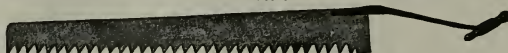


Fig. 420

No. 420—Ice Saws, 4 feet.....each	\$5.00	No. 425—Ice Saws, 4 feet.....each	\$4.50
No. 421—Ice Saws, 4½ feet.....	5.25	No. 426—Ice Saws, 4½ feet.....	4.75
No. 422—Ice Saws, 5 feet.....	5.50	No. 427—Ice Saws, 5 feet.....	5.00
No. 423—Ice Saws, 5½ feet.....	5.75	No. 428—Ice Saws, 5½ feet.....	5.25

BREAKING BAR

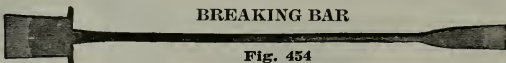


Fig. 454

Weight, 16½ lbs.. length, 4 ft. 8 in.; pad, 7½ in. x 4¼ in.; chisel blade, 2¾ in. wide.
No. 454—Breaking Bars.....each \$3.50

BAR CHISEL

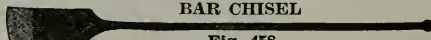


Fig. 458

Weight, 15½ lbs., length, 4 ft. 7 in.; blade, 12 in. x 4¼ in.
No. 458—Bar or Packing Chisels, steel handles.....each \$3.50

D HANDLE 4-POINT ICE SHAVER

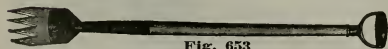


Fig. 653

Weight, 3¼ lbs.; length, 3 ft. 6 in.; blade, 6½ x 4¼ in. wide; long teeth; handle, 1¼ in. diameter.

No. 653—D Handle 4-Point Ice Shavers, small blade (special teeth; 1¼-inch handle)each \$1.75

LONG HANDLE 4-POINT ICE SHAVER

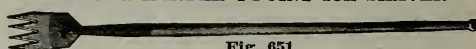


Fig. 651

Weight, 3 lbs.; length, 3 ft. 11 in.; blade, 6½ x 4¼ in. wide; long teeth; handle, 1¼ in. diameter.

No. 651—Long Handle 4-Point Ice Shavers, small blade (special teeth; 1¼-inch handle)each \$1.75

TONGS

Boston Tongs, Solid Handles



Fig. 540

No. 540	
13 in., 34 lbs....dozen	\$13.00
14½ in., 39 lbs....	13.50
16½ in., 46 lbs....	14.00
24 in., 62 lbs....	16.00
26 in., 68 lbs....	17.00



Fig. 554

SIDEWALK CLEANERS

With 4 foot Hickory Handles

No. 554. Medium, 7 in. blade, 5 in. deep.doz.\$6.00
Heavy, 7 in. blade, 6 in. deep.doz. 8.00

WIRE ROPE

NOTES ON THE CONSTRUCTION AND USES OF WIRE ROPE

We stock Wire Rope for every purpose, from the smallest Galvanized Strand, employed principally for guys, to the powerful Bridge Cable. The principal uses of the various kinds of rope are shown in connection with the price of each in this catalog.

Ordinarily, Wire rope is composed of six strands of seven, twelve or nineteen wires each, wound around a hemp center, thus forming ropes of forty-two, seventy-two or 114 wires.

Ropes of seven wires to the strand are most used for standing ropes, guys, ships' rigging, power transmission and a number of similar purposes.

Ropes of twelve wires to the strand are more pliable and are used principally in ships' rigging.

More pliable still is the rope composed of nineteen wires to the strand. This, therefore, is largely employed for hoisting in mines, elevators, etc.

Rope of special construction, having almost any number of wires to the strand, will be made to order to fit any purpose for which rope of ordinary construction is not adapted.

To preserve Wire Rope, we recommend Dixon's Waterproof Graphite Grease, which is particularly adapted for gears, wire ropes, elevator guides, and mining and quarrying machinery. It is fresh and salt water proof and will not wash off in acid water. Unsurpassed as a rust preventative. See index.

Wire rope is as flexible as new hemp rope of equal strength. It weighs less and is far more efficient and durable.

A strain of from one-seventh to one-fifth of the breaking strain, shown in connection with the prices in this catalog, may be taken as a safe working load. Standing ropes will sustain a somewhat greater strain.

The largest drums, sheaves and pulleys that are practical should be employed, and high speed should be avoided. Ropes thus properly used will give far better service and last much longer.

When drums are large enough to permit the use of coarse rope, these will prove more durable than the finer, more flexible ropes.

TRANSMISSION ROPE

The Ropes for Transmission purposes are made of best iron, and consist of a hemp core and six strands, with seven wires to each strand.

A finer Rope of nineteen wires to each strand is made which is sometimes preferable to the other, where the distance is short and it is desirable to use a larger rope than is called for by the table; or where the space is limited, and sheaves as large as called for by the table cannot be used. This is because it is more flexible; but extra care must be taken that it does not "tick" against the iron sides of the sheaves, as the wires are so small they wear through quickly if this occurs.

Crucible Cast Steel Ropes can be used just as well, and are preferred by many, as they stretch less.

There is an article of galvanized rope made for guys and ship rigging, but this must not be used for running rope, as the zinc soon wears off and it rusts much faster.

To preserve the ropes, swab them in raw linseed oil, or pour warm coal tar into the grooves of sheaves while running.

Table of Transmission of Power of Wire Ropes

This table is based upon scientific calculations, careful observations and experience, and can be relied upon when the distance exceeds 100 feet. We also find by experience that it is best to run the Wire Rope Transmissions at the medium number of revolutions indicated in the table, as it makes the best and smoothest running transmission. If more power is needed than is indicated at 80 to 100 revolutions, choose a larger diameter of sheave.

Diameter of Sheave in ft.	Number of Revolutions.	Diameter of Rope.	Horse Power.	Diameter of Sheave in ft.	Number of Revolutions.	Diameter of Rope.	Horse Power.
3	80	$\frac{3}{8}$	3	7	140	$\frac{3}{8}$	35
3	100	$\frac{3}{8}$	3½	8	80	$\frac{3}{8}$	26
3	120	$\frac{3}{8}$	4	8	100	$\frac{3}{8}$	32
3	140	$\frac{3}{8}$	4½	8	120	$\frac{3}{8}$	39
4	80	$\frac{3}{8}$	4	8	140	$\frac{3}{8}$	45
4	100	$\frac{3}{8}$	5	9	80	$\frac{7}{16}$	47
4	120	$\frac{3}{8}$	6	9	100	$\frac{7}{16}$	58
4	140	$\frac{3}{8}$	7	9	120	$\frac{7}{16}$	69
5	80	$\frac{7}{16}$	9	9	140	$\frac{7}{16}$	82
5	100	$\frac{7}{16}$	11	10	80	$\frac{1}{2}$	84
5	120	$\frac{7}{16}$	13	10	100	$\frac{1}{2}$	100
5	140	$\frac{7}{16}$	15	10	120	$\frac{1}{2}$	116
6	80	$\frac{1}{2}$	14	10	140	$\frac{1}{2}$	140
6	100	$\frac{1}{2}$	17	12	80	$\frac{1}{2}$	119
6	120	$\frac{1}{2}$	20	12	100	$\frac{1}{2}$	141
6	140	$\frac{1}{2}$	23	12	120	$\frac{1}{2}$	176
7	80	$\frac{1}{2}$	20	12	140	$\frac{1}{2}$	185
7	100	$\frac{1}{2}$	25	14	80	1-1/4	141
7	120	$\frac{1}{2}$	30	14	100	1-1/4	176

WIRE ROPE FOR INCLINED PLANES

For the benefit of those desiring to use Wire Rope on slopes, inclined planes, etc., we annex a table by which the strain produced by any load may be readily ascertained.

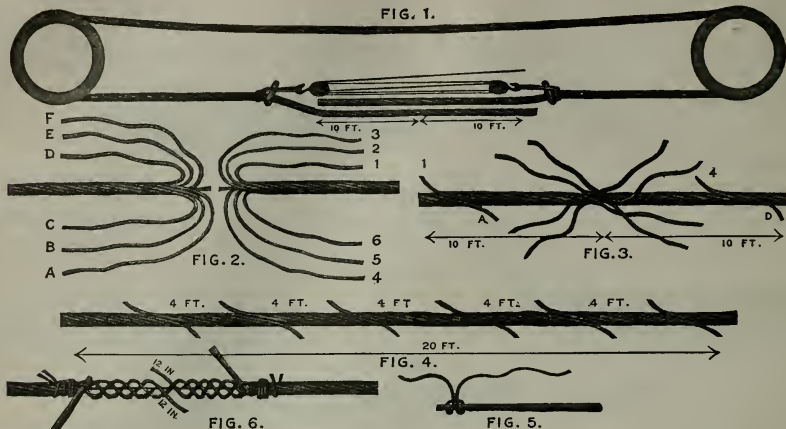
This table gives only the strain produced on a rope by a load of one ton of two thousand pounds, an allowance for rolling friction being made an additional allowance for the weight of the rope will have to be made.

Example: For an inclination of 100 feet in 100 feet, corresponding to an angle of 45°, a load of 2,000 pounds will produce a strain on the rope of 1,419 pounds and for a load of 9,000 pounds the strain on the rope will be 6,355½ pounds.

Elevation in 100 Feet.	Corresponding Angle of inclination in Degrees.	Strain in lbs. on Rope from a load of 2,000 lbs.	Elevation in 100 Feet.	Corresponding Angle of inclination in Degrees.	Strain in lbs. on Rope from a load of 2,000 lbs.
5	27°	112	95	43½°	1,385
10	5½°	211	100	45°	1,419
15	8½°	308	105	46½°	1,457
20	11½°	404	110	47½°	1,487
25	14½°	497	115	49°	1,516
30	16½°	586	120	50½°	1,544
35	19½°	673	125	51½°	1,570
40	21½°	754	130	52½°	1,592
45	24½°	832	135	53½°	1,614
50	26½°	905	140	54½°	1,633
55	28½°	975	145	55½°	1,653
60	31°	1,040	150	56½°	1,671
65	33½°	1,100	155	57½°	1,689
70	35°	1,156	160	58½°	1,703
75	37°	1,210	165	59½°	1,717
80	38½°	1,260	170	59½°	1,729
85	40½°	1,304	175	60½°	1,742
90	42°	1,347			

A factor of safety of five to seven times should be taken; that is, the working load on the rope should only be one-fifth to one-seventh of its breaking strength. As a rule, ropes for shafts should have a factor of safety of five, and on inclined planes, where the wear is much greater the factor of safety should be seven.

DIRECTIONS FOR SPLICING WIRE ROPE



Wire rope is susceptible to the most perfect splice; a smoother and better splice can be put in a wire rope than in any other kind of rope, for the simple reason that it is made with a view to this purpose. It has just the desired number of strands, namely, six, and a hemp core which provides a place for fastening the ends. It is a plain, simple process, and but the work of an hour for any one to learn.

TO GET THE LENGTH OF THE ROPE TO BE SPLICED ENDLESS

In most cases the ropes can be applied endless, and in such cases the ropes can be forwarded spliced ready to go on. We can furnish ropes ready spliced by giving us the exact distance from center to center of shaft, and the exact diameters of the wheels on which the rope is to run. This measure can be got best by stretching a wire from shaft to shaft, marking the distance from center to center of shaft and carefully measuring the wire.

In cases where the endless rope cannot be put on, the rope has to be put around the sheaves, hove taut by pulley blocks, and the splice made on the spot. See Fig. 1 in diagram of splices.

THE NECESSARY TOOLS—A hammer and sharp cold chisel for cutting of ends off strands; a steel point or marlin spike for opening strands; two slings of tarred rope with sticks (see Fig. 5), for untwisting rope; a pocket knife for cutting the hemp core; a wooden mallet and block.

FIRST—Put the rope around the sheaves, and heave it tight with block and fall. (See Fig. 1.) The blocks should be hitched far enough apart so as to give room between to make a 20-ft. splice. A small clamp may be used to prevent the lashing from slipping on the rope where the blocks are hitched. (See Fig. 1.) Next, see that the ropes overlap about 20 feet; about ten feet each way from the center, as shown by the arrow lines in Fig. 1. Next mark the center on both ropes with a piece of chalk, or by tying on a small string. Now proceed to put in the splice, with the blocks remaining taut when it is necessary; but the better way is to remove the blocks, throw off the rope from the sheaves, let it hang loose on the shafts, and proceed with the splice on the ground or floor, or scaffold, as the case may be.

SECOND—Unlay the strands of both ends of the rope for a distance of ten feet each, or to the center mark, as shown in Fig. 2. Next, cut off the hemp cores close up, as shown in Fig. 2, and bring the

bunches of strands together so that the opposite strands will interlock regularly with each other. (See Fig. 3.)

THIRD—Unlay any strand, A, and follow up with strand 1 of the other end, laying it tightly in open groove made by unwinding A, make twist of the strand agree exactly with the twist of the open groove. Proceed with this until all but twelve inches of 1 are laid in, or until A has become ten feet long. Next, cut off A, leaving an end about twelve inches long.

FOURTH—Unlay a strand 4, of the opposite end, and follow with strand D, laying it into the open groove as before and treating this precisely as in the first case. (See Fig. 3.) Next, pursue the same course with B and 2, stopping four feet short of the first set. Next, with 5 and E, stopping as before; then with C and 3; and lastly with 6 and F. The strands are now all laid in with the ends four feet apart, as shown in Fig. 4.

FIFTH AND LAST—The ends must now be secured without enlarging the diameter of the rope. Take two rope slings or twisters (See Fig. 5) and fasten them to the rope as shown in Fig. 6; twist them in opposite directions, thus opening the lay of the rope. (See Fig. 6.) Next, with a knife, cut the hemp core about twelve inches on each side. Now straighten the ends, and slip them into the place occupied by the core; then twist the slings back, closing up the rope, taking out any slight inequality with a wooden mallet. Next, shift the slings, and repeat the operation at the other five places, and the splice is made.

If the rope becomes slack, in time, and runs too loose, a piece can be cut out and the rope tightened up. This will require a piece of rope about 40 feet long and two splices, one splice to put on the piece of rope, and the other splice to join the two ends together.

LABOR OF SPLICING ROPE

Special **NET** price for splicing wire rope, \$0.75 per hour, per man.

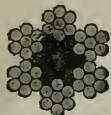
The above charge to be in addition to the extra rope used in making splice. **These prices apply only on wire ropes spliced at our store.**

Special price for splicing required elsewhere, depending on the circumstances of each individual case.

Compound logging ropes can be conveniently and properly spliced when using the knot splice.

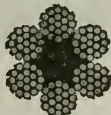
CONSTRUCTION OF WIRE ROPE

The cross sections of Wire Rope, as herewith illustrated, comprise the different styles used, dependent upon the nature of the work they are to perform.



HAULAGE AND STANDING ROPE

Composed of six strands of 7 wires per strand, laid about a hemp core. Principally used for Mine haulage, Derrick, Guys, Ships' rigging etc.



HOISTING ROPE

Composed of six strands of 6 wires per strand laid about a hemp core. Principally used for Mine Hoists, Elevators and all places where pliability and strength are desired.

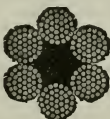


EXTRA FLEXIBLE HOISTING ROPE

Composed of eight strands of 9 wires per strand laid about a hemp core.

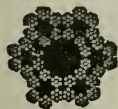
SPECIAL EXTRA FLEXIBLE HOISTING ROPE

Composed of six strands of 37 wires per strand, laid about a hemp core. Principally used where extreme pliability and great strength are required.



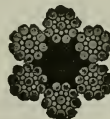
WIRE TILLER ROPE

Composed of six individual Ropes, laid about a hemp core—each of these ropes consists of six strands of 7 wires per strand, also laid about hemp cores. Used principally for Hand Rope on Elevators and for Steering Rope for Steamers.



CABLE CONSTRUCTION

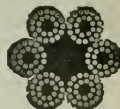
Composed of six strands of 19 wires per strand laid about a hemp core. Each strand is composed of 9 large outer wires, 9 small inner wires and one large center wire.



GALVANIZED STEEL HAWSER

GALVANIZED STEEL HAWSER

Composed of six strands of 24 wires per strand, laid about a hemp core. There is also an additional hemp core in the center of each strand.



Composed of six strands of 37 wires per strand, laid about a hemp core.



(Registered Trade Mark)

The strongest steel rope of equal flexibility and elasticity ever made

Without a doubt, the severest test to which any wire rope has ever been subjected is on the unloaders in the Canal work at Panama. Whole trains of from sixteen to nineteen cars, packed high with dirt and rock, are unloaded by dragging a special plov from end to end of the train by a single 1½-inch steel cable.

A ninety-ton strain is not unusual. And working conditions generally could hardly be worse.

Yellow Strand, by its strength and ability to stand the roughest usage, unloaded over three times as many dirt trains at Panama as has ever been unloaded previous to introduction of Yellow Strand cables.

Based on the cost of the cable, the unloading cost per train was reduced to such low figures as had never been thought possible.

Wherever extra heavy work is to be done—logging, mining and other heavy hoisting, Yellow Strand proves most economical because most durable.

It is made from highest grade steel wire especially imported for the purpose. Rigid inspection by the manufacturers, by the United States Government for dutiable purposes, and by the mill, positively assures that every single wire will meet the special requirements of 240,000 to 260,000 pounds tensile strength per square inch.

The advanced methods of manufacture careful supervision and final inspection insure perfect uniformity.

The wires, the cores of the strands, the strands, all are round—the only form which permits of bending in every direction with equal strain.

Yellow Strand is especially recommended for use in deep shafts, on inclines, derricks, ballast unloaders and all other places where greatest strength is demanded. For all logging purposes—on skidders, pull boats, etc., the immense strength and elasticity of Yellow Strand place this great wire rope in the peculiar position of being absolutely beyond competition.

FOR PRICES ON YELLOW STRAND, SEE NEXT PAGE

YELLOW STRAND POWERSTEEL WIRE ROPE

The Most Powerful Wire Rope Made

STANDARD YELLOW STRAND
POWERSTEEL HOISTING
ROPE

6 x 19

6 Strands, 19 Wires per Strand, around
a Hemp Center.

Diameter in inches	List Price per foot	Circumfer. in inches	Approx. Weight per foot	Approx. Strength Tons 2000 lbs.	Proper Work'g Load in Tons 2000 lbs.	Diam. of Drum or Sheave in feet Advised
3/4	\$0.13	3/4	.10	3.15	.63	1
5/16	.13 1/2	1	.15	4.50	.9	1 1/4
3/8	.14 1/2	1 1/4	.22	6.75	1.35	1 1/2
7/16	.15 1/2	1 1/2	.30	9.4	1.9	1 3/4
1/2	.17	1 3/4	.39	12.1	2.4	2
9/16	.19	1 3/4	.50	14.5	2.9	2 1/4
5/8	.22 1/2	2	.62	19	3.8	2 1/2
3/4	.31	2 1/4	.89	26.3	5.3	3
7/8	.39	2 3/4	1.20	35	7	3 1/2
1	.50	3	1.58	45	9	4
1 1/8	.62	3 1/2	2	56	11	4 1/2
1 1/4	.75	4	2.45	69	14	5
1 1/2	.90	4 1/4	3	84	17	5 1/2
1 3/4	1.10	4 3/4	3.55	98	20	6
1 7/8	1.30	5	4.15	110	22	6 1/2
2	1.60	5 1/2	4.85	133	27	7
1 3/8	1.75	5 3/4	5.55	150	30	8
2 1/8	1.85	6 1/4	6.30	166	33	8
2 1/4	2.50	7 1/8	8	210	42	9
2 1/2	2.80	7 3/4	9.85	263	53	10
2 3/4	3.45	8 1/2	11.95	315	63	11

EXTRA FLEXIBLE "YELLOW
STRAND" POWERSTEEL
ROPE

8 x 19

8 Strands, 19 Wires per Strand, around a Hemp Center.

Diameter in inches	List Price per foot	Circumference in inches	Approximate Weight per foot	Approximate Strength Tons 2000 lbs.	Proper Work'g Load in Tons 2000 lbs.	Diam. of Drum or Sheave in feet Advised
3/4	\$0.19	1 1/4	.35	9.5	1.9	1.33
9/16	.22	1 1/2	.45	12	2.4	1.5
5/8	.25	2	.56	15	3	1.75
3/4	.34	2 1/4	.80	22	4.4	1.83
7/8	.43	2 3/4	1.08	28	5.6	2.15
1	.55	3	1.42	36	7.2	2.5
1 1/8	.68	3 1/2	1.80	46	9.2	2.83
1 1/4	.82	4	2.20	56	11	3.2
1 1/2	.98	4 1/4	2.70	68	13	3.5
1 3/4	1.19	4 3/4	3.19	80	16	3.75

PLIABLE "YELLOW STRAND"
POWERSTEEL ROPE

6 x 37

6 Strands, 37 Wires per Strand, around a Hemp Center.

Diameter in inches	List Price per foot	Circumference in inches	Approximate Weight per foot	Approximate Strength Tons 2000 lbs.	Proper Work'g Load in Tons 2000 lbs.	Diam. of Drum or Sheave in feet Advised
3/4	\$0.17 1/4	1 1/4	.22	5.30	1.06	1
7/16	.18 1/2	1 1/4	.30	7.50	1.5	1.16
3/8	.20	1 1/2	.39	9.75	1.9	1.33
9/16	.23	1 3/4	.50	12.50	2.5	1.50
5/8	.27	2	.62	16	3.2	1.75
3/4	.36	2 1/4	.89	23	4.6	1.83
7/8	.46	2 3/4	1.20	29	5.8	2.16
1	.59	3	1.58	37	7.4	2.50
1 1/8	.75	3 1/2	2	46	9.2	2.83
1 1/4	.86	4	2.45	58	11	3.20
1 3/8	1.05	4 1/4	3	71	14	3.50
1 1/2	1.25	4 3/4	3.55	84	17	3.75
1 3/4	1.45	5	4.15	95	19	.....
1 7/8	1.75	5 1/2	4.85	112	23	.....
2	2.10	6	5.55	132	27	.....
2 1/8	2.80	7 1/8	8	184	37	.....
2 1/4	3.15	7 3/4	9.85	225	45	.....
2 3/4	3.75	8 1/2	11.95	278	55	.....

COARSE LAID "YELLOW STRAND"
POWERSTEEL ROPE

6 x 7

6 Strands, 7 Wires per Strand, around a Hemp Center.

Diameter in inches	List Price per foot	Circumference in inches	Approximate Weight per foot	Approximate Strength Tons 2000 lbs.	Proper Work'g Load in Tons 2000 lbs.	Diam. of Drum or Sheave in feet Advised
3/4	\$0.08 1/4	1 1/4	.22	6 1/2	1.3	2 1/4
7/16	.11 1/2	1 1/4	.30	7 1/2	1.5	3
3/8	.13 1/2	1 1/2	.39	11	2.2	3 1/2
9/16	.17	1 3/4	.50	13	2.8	4
5/8	.20 1/2	2	.62	17 1/2	3.5	4 1/2
11/16	.24 1/4	2 1/4	.75	20	4	4 3/4
3/4	.28 1/2	2 1/4	.89	25	5	5
7/8	.37	2 3/4	1.20	33	6.6	6
1	.48	3	1.58	42	8.4	7
1 1/8	.58	3 1/2	2	52	10	8
1 1/4	.72	4	2.45	67	13	9
1 1/2	.88	4 1/4	3	79	16	10
1 3/4	1.05	4 3/4	3.55	90	18	11

FOR BLOCKS, COME-ALONGS AND TAKE-UPS, SEE INDEX

"PATENTSTEEL" ROPE.

(Registered Trade Mark)

The strength of "Patentsteel" is between that of ordinary Crucible Cast Steel and Plough Steel. While not so strong as either Plough Steel or Yellow Strand, it has the advantage of extreme pliability, which must be sacrificed to some extent in making wire rope for extra heavy work.

"Patentsteel" is made from a very fine grade of mild Plough Steel wire, and combines the greatest degree of toughness, ductility and elasticity, together with a very high degree of tensile strength. The greatest deterioration of wire hoisting and running ropes is caused by crystallization of the wires, due to bending back and forth over the drums and sheaves, and not so much from strains to which they may be subjected. The extreme flexibility of "Patentsteel" reduces crystallization to the lowest degree.

In extra heavy work, "Patentsteel," of course, is not so serviceable as Yellow Strand. But when pliability is the prime consideration, i. e., where small sheaves are required "Patentsteel" fills every requirement. We especially recommend "Patentsteel" Wire Rope for quarries, contractors, bridge builders, miners; and in any work where good haulage ropes, sand lines, drilling lines and tubing are required.

"Patentsteel" Hoisting Rope is usually made with six strands of nineteen wires each; Haulage or Standing Rope with six seven-wire strands.

PATENTSTEEL HOISTING ROPES

6x19

6 Strands, 19 Wires per Strand, around a Hemp Center

Diameter in inches	Circumference in inches	Approximate weight, per foot	Approximate strength, tons of 2000 lbs.	Propr. work, load tons of 2000 lbs.	Diam. drum or sheave in ft. advised	List price per foot
1/4	3/4	.10	2.43	.49	1	\$0.10 1/2
5/16	1	.15	3.50	.70	1 1/2	.10 3/4
3/8	1 1/4	.22	5.30	1.06	1 1/2	.11
1/2	1 3/4	.30	7.25	1.45	2	.11 1/2
5/8	2	.39	9.2	1.84	2 1/2	.12 1/2
3/4	2 1/4	.50	11.2	2.24	2 1/2	.14
7/8	2 3/4	.62	14	2.80	2 1/2	.16 1/2
1	3	.89	20.2	4.04	3	.22
1 1/8	3 1/2	1.20	26	5.20	3 1/2	.29
1 1/4	3 3/4	1.58	34	6.80	4	.37
1 1/2	4	2	43	8.06	4 1/2	.46
1 3/4	4 1/4	2.45	53	10.6	5	.56
1 7/8	4 1/2	3	64	12.8	5 1/2	.68
2	4 3/4	3.55	73	14.6	6	.80
2 1/8	5	4.15	83	16.6	6 1/2	.94
2 1/4	5 1/2	4.85	99	19.8	7	1.10
2 1/2	5 3/4	5.55	112	22.4	8	1.25
2 3/4	6 1/4	6.3	123	24.6	8	1.34
2 7/8	6 3/4	7	160	32	9	1.70
3	7 1/4	7.85	200	40	10	2.10
3 1/2	8	11.95	243	48.6	11	2.55

HAULAGE AND SAND LINE ROPES

6x7

6 Strands, 7 Wires per Strand, around a Hemp Center

Diameter in inches	Circumference in inches	Approximate weight, per foot	Approximate strength, tons of 2000 lbs.	Propr. work, load tons of 2000 lbs.	Diam. drum or sheave in ft. advised	List price per foot
3/8	1 1/4	.12 1/2	2.95	.59	1 1/2	\$0.05
1/2	1 1/2	.15	3.95	.79	2 1/4	.06 1/2
5/8	1 3/4	.22	5.25	1.05	2 1/2	.06
3/4	1 7/8	.30	6.25	1.25	3	.07 1/2
7/8	2	.39	8.85	1.8	3 1/2	.09 1/2
1	2 1/4	.50	11	2.2	4	.12
1 1/8	2 1/2	.62	14.5	2.9	4 1/2	.14 1/4
1 1/4	2 3/4	.75	16.7	3.3	4 3/4	.17
1 1/2	3	.89	21	4.2	5	.20
1 3/4	3 1/4	1.20	28	5.6	6	.27
1 7/8	3 1/2	1.58	35	7	7	.35
2	3 3/4	2	43	8.6	8	.44
2 1/8	4	2.45	54	10.8	9	.53
2 1/4	4 1/4	3	63	12.6	10	.64
2 1/2	4 1/2	3.55	73	14.6	11	.75

8 STRAND PATENTSTEEL HOISTING ROPE

8x19

8 Strands, 19 Wires per Strand, around a Hemp Center

Diameter in inches	Circumference in inches	Approximate weight per foot	Approximate strength in tons of 2000 lbs.	Propr. work, load tons of 2000 lbs.	Diam. of drum or sheave in feet advised	List price per foot
1/4	3/4	.09	2.02	.40	1	\$0.11 3/4
5/16	1	.13	3.05	.61	1 1/2	.12
3/8	1 1/4	.20	4.66	.92	1 1/2	.13 1/4
1/2	1 3/4	.27	6.30	1.26	2	.13
5/8	2	.35	8	1.6	2 1/2	.14
3/4	2 1/4	.45	10.1	2	2 1/2	.16
7/8	2 3/4	.56	12.4	2.5	2 1/2	.18 1/2
1	3	.80	17.6	3.5	3	.25
1 1/8	3 1/4	1.08	23	4.6	3 1/2	.32
1 1/4	3 1/2	1.42	29.7	5.9	4	.41
1 1/2	3 3/4	1.80	38	7.6	4 1/2	.51
1 3/4	4	2.20	47	9.4	5	.62
1 7/8	4 1/4	2.70	57	11	5 1/2	.75
2	4 1/2	3.19	66	13	6	.88

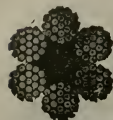
PLIABLE PATENTSTEEL ROPE

6x37

6 Strands, 37 Wires per Strand around a Hemp Center

Diameter in inches	Circumference in inches	Approximate weight per foot	Approximate strength in tons of 2000 lbs.	Propr. work, load tons of 2000 lbs.	Diam. of drum or sheave in feet advised	List price per foot
3/8	1 1/4	.22	4.65	.93	1	\$0.13
1/2	1 1/2	.30	6.35	1.27	1 1/2	.14
5/8	1 3/4	.39	8.25	1.65	1 1/2	.15
3/4	1 7/8	.50	10.5	2.1	2	.17 1/2
7/8	2	.62	12.6	2.5	2 1/2	.21
1	2 1/4	.89	19	3.8	2 1/2	.27
1 1/8	2 1/2	1.20	25	5	3	.34
1 1/4	2 3/4	1.58	32	6.4	3 1/2	.44
1 1/2	3	2	39	8	4	.55
1 3/4	3 1/4	2.45	50	10	4 1/2	.65
1 7/8	3 1/2	3	61	12	5	.78
2	3 3/4	3.55	71	14	5 1/2	.95
2 1/8	4	4.15	79	16	6	1.07
2 1/4	4 1/4	4.85	95	19	6 1/2	1.28
2 1/2	4 1/2	6.30	117	23	7	1.55
2 3/4	4 3/4	8	150	30	8	1.90
3	5	9.85	187	37	9	2.35
3 1/2	5 1/2	11.95	233	47	10	2.80

NOTE.—When the Patentsteel Rope named above is galvanized, add 10 per cent. to list price per foot and apply GALVANIZED DISCOUNT. When made with a WIRE CENTER, add 10 per cent to list price per foot. For ropes with more than 37 wires to the strand add 10 per cent to list price per foot.

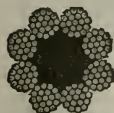


PLOW STEEL WIRE ROPE

STANDARD PLOW STEEL HOISTING ROPES 6x19

6 Strands, 19 Wires per Strand, around a Hemp Center.

Diameter in inches	List Price per foot	Circumference in inches	Approximate Weight per foot	Approximate Strength Tons 2000 lbs.	Proper Work'g Load in Tons 2000 lbs.	Diam. of Sheave in Feet Advised
1/4	\$.12	3/4	.10	2.65	.53	1
5/16	.12 1/4	1	.15	3.8	.76	1.25
3/8	.12 1/2	1 1/8	.22	5.75	1.15	1.50
7/16	.13	1 1/4	.30	8	1.6	1.75
1/2	.14	1 1/2	.39	10	2	2
9/16	.16	1 3/4	.50	12.3	2.4	2 25
5/8	.19	2	.62	15.5	3.1	2.5
3/4	.26	2 1/4	.89	23	4.6	3
7/8	.34	2 3/4	1.20	29	5.8	3.5
1	.43	3	1.58	38	7.6	4
1 1/8	.54	3 1/2	2	47	9.54	4.5
1 1/4	.65	4	2.45	58	12	5
1 3/8	.79	4 1/4	3	72	14	5.5
1 1/2	.93	4 3/4	3.55	82	16	6
1 5/8	1.08	5	4.15	94	19	6.5
1 3/4	1.30	5 1/2	4.85	112	22	7
1 7/8	1.46	5 3/4	5.55	127	25	8
2	1.58	6 1/4	6.3	140	28	8
2 1/4	2.00	7 1/8	8	186	37	9
2 1/2	2.50	7 7/8	9.85	229	46	10
2 3/4	3.00	8 1/4	11.95	275	55	11



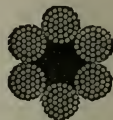
EXTRA FLEXIBLE PLOW STEEL HOISTING ROPE

8x19

8 Strands, 19 Wires per Strand, around a Hemp Center.

Diameter in inches	List Price per foot	Circumfer. in inches	Approx. Weight per foot	Approx. Strength Tons 2000 lbs.	Proper Work'g Load in Tons 2000 lbs.	Diam. of Drum or Sheave in Feet Advised
1/4	\$0.13 1/4	3/4	.09	2.25	.45	.75
5/16	.13 1/2	1	.13	3.35	.66	.83
3/8	.14	1 1/8	.20	5.12	1.02	1
7/16	.15	1 1/4	.27	6.90	1.38	1.16
1/2	.16	1 1/2	.35	8.7	1.74	1.33
9/16	.18	1 3/4	.45	11.6	2.32	1.50
5/8	.21	2	.56	14	2.8	1.75
3/4	.29	2 1/4	.80	20	4	1.83
7/8	.38	2 3/4	1.08	26	5.2	2.16
1	.48	3	1.42	33	6.6	2.5
1 1/8	.60	3 1/2	1.80	43	8.6	2.83
1 1/4	.72	4	2.20	52	10.4	3.2
1 1/2	.87	4 1/4	2.70	64	12.8	3.5
1 3/4	1.03	4 3/4	3.19	74	14.8	3.75

Note—When the Plow Steel Rope named above is galvanized, add 10 per cent to list price per foot, and apply GALVANIZED DISCOUNT. When made with a WIRE CENTER, add 10 per cent to list price per foot. For ropes of more than 19 wires to the strand and less than 37 wires, unless specially listed herein, apply list for 37 wires.



PLIABLE PLOW STEEL ROPE

6x37

6 Strands, 37 Wires per Strand, around a Hemp Center.

Diameter in inches	List Price per foot	Circumfer. in inches	Approx. Weight per foot	Approx. Strength Tons 2000 lbs.	Proper Work'g Load in Tons 2000 lbs.	Diam. of Drum or Sheave in Feet Advised
3/4	\$0.15	1 1/4	.22	5.1	1	1
7/16	.16	1 1/8	.30	7.2	1.4	1.16
1/2	.17	1 1/2	.39	9.25	1.85	1.33
9/16	.20	1 3/4	.50	11.5	2.3	1.5
5/8	.24	2	.62	14	3	1.75
3/4	.31	2 1/4	.89	21	4	1.83
7/8	.40	2 3/4	1.20	27	5	2.16
1	.51	3	1.58	35	7	2.5
1 1/8	.64	3 1/2	2	44	9	2.83
1 1/4	.75	4	2.45	55	11	3.2
1 1/2	.91	4 1/4	3	68	14	3.5
1 3/4	1.10	4 3/4	3.55	80	16	3.75
1 5/8	1.25	5	4.15	90	18	.....
1 7/8	1.50	5 1/2	4.85	108	22	.....
2	1.80	6 1/4	6.30	130	26	.....
2 1/4	2.20	7 1/8	8	175	35	.....
2 1/2	2.75	7 7/8	9.85	214	43	.....
2 3/4	3.30	8 1/4	11.95	265	53	.....

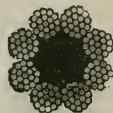
COARSE LAID PLOW STEEL HAULAGE ROPES

6x7

6 Strands, 7 Wires per Strand, around a Hemp Center.

Diameter in inches	List Price per foot	Circumfer. in inches	Approx. Weight per foot	Approx. Strength Tons 2000 lbs.	Proper Work'g Load in Tons 2000 lbs.	Diam. of Drum or Sheave in Feet Advised
9/32	\$0.05 1/4	7/8	.12 1/2	3.4	.68	1 1/4
5/16	.06	1	.15	4.4	.88	2 1/4
3/8	.06 1/2	1 1/8	.22	5.9	1.2	2 3/4
7/16	.09	1 1/4	.30	7	1.4	3
1/2	.11 1/2	1 1/2	.39	10	2	3 1/2
9/16	.14 1/2	1 3/4	.50	12	2.4	4
5/8	.17 1/2	2	.62	16	3.2	4 1/2
11/16	.21	2 1/8	.75	18	3.6	4 3/4
3/4	.24 1/2	2 1/4	.89	23	4.6	5
7/8	.32	2 3/4	1.20	31	6.2	6
1	.41	3	1.58	38	7.8	7
1 1/8	.51	3 1/2	2	47	9.8	8
1 1/4	.62	4	2.45	60	12.4	9
1 1/2	.76	4 1/4	3	72	14.6	10
1 3/4	.90	4 3/4	3.55	82	16.8	11

CRUCIBLE CAST STEEL PLIABLE HOISTING ROPES



CRUCIBLE CAST STEEL PLIABLE HOIST- ING ROPE

6x19

6 Strands, 19 Wires per Strand, around a Hemp Center.

Diameter in inches	List price per foot	Circumfer. in inches	Approx. Wt. per foot	Approx. Sixth. Tons 2000 lbs.	Prop. work load tons 2000 lbs.	Diam. drum or sheave in feet advised
1/4	\$0.09	3/4	.10	2.2	.44	1
5/16	.09 1/4	1	.15	3.1	.62	1.25
3/8	.09 1/2	1 1/4	.22	4.8	.96	1.50
7/16	.10	1 1/2	.30	6.5	1.30	1.75
1/2	.11	1 3/4	.39	8.4	1.68	2
5/8	.12	1 7/8	.50	10	2	2.25
3/4	.14	2	.62	12.5	2.5	2.5
7/8	.19	2 1/4	.89	17.5	3.5	3
1	.24	2 3/4	1.20	23	4.6	3.5
1 1/8	.31	3	1.58	30	6	4
1 1/4	.38	3 1/2	2	38	7.6	4.5
1 1/2	.46	4	2.45	47	9.4	5
1 3/4	.56	4 1/4	3	56	11.2	5.5
1 7/8	.66	4 3/4	3.55	64	12.8	6
2	.77	5	4.15	72	14.4	6.5
2 1/8	.90	5 1/2	4.85	85	17	7
2 1/4	1.02	5 3/4	5.55	96	19	8
2 1/2	1.16	6 1/4	6.30	106	21.2	8
2 3/4	1.44	7 1/8	8	133	26.6	9
2 7/8	1.75	7 3/4	9.85	170	34	10
3	2.10	8 1/4	11.95	211	42.2	11

8 STRAND CAST STEEL HOISTING ROPE

8x19

8 Strands, 19 Wires per Strand, around a Hemp Center.

Diameter in inches	List price per foot	Circumfer. in inches	Approx. Wt. per foot	Approx. Sixth. Tons 2000 lbs.	Prop. work load tons 2000 lbs.	Diam. drum or sheave in feet advised
1/4	\$0.10	3/4	.09	1.80	.36	.75
5/16	.10 1/4	1	.13	2.75	.55	.83
3/8	.10 1/2	1 1/4	.20	4.2	.84	1
7/16	.11	1 1/2	.27	5.7	1.14	1.16
1/2	.12	1 3/4	.35	7.3	1.46	1.33
5/8	.14	1 7/8	.45	8.7	1.74	1.5
3/4	.16	2	.56	10.9	2.18	1.75
7/8	.21	2 1/4	.80	15.3	3.06	1.83
1	.27	2 3/4	1.08	20	4	2.16
1 1/8	.34	3	1.42	26	5.2	2.5
1 1/4	.42	3 1/2	1.80	34	6.8	2.83
1 1/2	.51	4	2.20	42	8.4	3.2
1 3/4	.62	4 1/4	2.70	51	10.2	3.5
1 7/8	.73	4 3/4	3.19	58	11.6	3.75

PLIABLE CAST STEEL ROPE

6x37

6 Strands, 37 Wires per Strand, around a Hemp Center.

Diameter in inches	List price per foot	Circumfer. in inches	Approx. Wt. per foot	Approx. Sixth. Tons 2000 lbs.	Prop. work load tons 2000 lbs.	Diam. drum or sheave in feet advised
3/8	\$0.12	1 1/4	.22	4.2	.84	1
7/16	.12 1/2	1 1/2	.30	5.5	1.1	1.16
1/2	.13	1 3/4	.39	7.25	1.45	1.33
5/8	.15	1 7/8	.50	9.5	1.9	1.5
3/4	.18	2	.62	11.2	2.2	1.75
7/8	.23	2 1/4	.89	17.5	3.5	1.83
1	.28	2 3/4	1.20	23	5	2.16
1 1/8	.37	3	1.58	29	6	2.5
1 1/4	.46	3 1/2	2	34	7	2.83
1 1/2	.55	4	2.45	45	9	3.2
1 3/4	.65	4 1/4	3	55	11	3.5
1 7/8	.79	4 3/4	3.55	63	12	3.75
2	.89	5	4.15	71	14	....
2 1/8	1.05	5 1/2	4.85	84	17	....
2 1/4	1.35	6 1/4	6.30	105	21	....
2 1/2	1.60	7 1/8	8	125	25	....
2 3/4	1.92	7 3/4	9.85	160	32	....
3	2.30	8 1/4	11.95	200	40	....

COARSE LAID HAULAGE ROPES

6x7

6 Strands, 7 Wires per Strand, around a Hemp Center

Diameter in inches	List price per foot	Circumfer. in inches	Approx. Wt. per foot	Approx. Sixth. Tons 2000 lbs.	Prop. work load tons 2000 lbs.	Diam. drum or sheave in feet advised
3/8	\$0.04	7/8	.12 1/2	2.5	.50	1 1/4
7/16	.04 1/2	1	.15	3.5	.70	2 1/4
3/8	.05 1/2	1 1/4	.22	4.6	.92	2 3/4
7/16	.06 1/2	1 1/2	.30	5.5	1.1	3
1/2	.08	1 3/4	.39	7.7	1.5	3 1/2
5/8	.10	1 7/8	.50	10	2	4
3/4	.12	2	.62	13	2.6	4 1/2
7/8	.14 1/2	2 1/4	.75	15.4	3.1	4 3/4
1	.17	2 3/4	.89	18.6	3.7	5
1 1/8	.22 1/2	3	1.20	24	4.8	6
1 1/4	.29	3 1/2	1.58	31	6.2	7
1 1/2	.36	3 3/4	2	37	7.4	8
1 3/4	.43	4	2.45	46	9.2	9
1 7/8	.51	4 1/4	3	53	10.6	10
2	.60	4 3/4	3.55	63	12.6	11

IRON ROPE, TILLER ROPES, SASH AND BELL CORDS

IRON PLIABLE HOISTING ROPES

6x19

6 Strands, 19 Wires per Strand, around a Hemp Center. Specially recommended for Elevator Use.

Diameter in inches	List price per foot	Circumference in inches	Approximate wt. per foot	Approximate strength in tons of 2000 lbs.	Proper working loads in tons of 2000 lbs.	Diameter of drum or sheave in feet advised
1/16	\$0.06 1/4	1 1/4	.10	1.1	.22	1.50
5/16	.06 3/4	1 1/2	.15	1.5	.30	2
3/8	.07	1 3/4	.22	2.4	.48	2.25
7/16	.07 1/2	1 3/4	.30	2.9	.58	2.75
1/2	.08 1/4	1 3/4	.39	3.9	.78	3
9/16	.10	1 3/4	.50	4.7	.94	3.5
5/8	.12	2	.62	6	1.20	4
3/4	.16	2 1/4	.89	8.5	1.70	4.5
7/8	.20	2 3/4	1.20	11.8	2.36	5.5
1	.26	3	1.58	14.5	2.90	6
1 1/16	.33	3 1/4	2	18.6	3.72	7
1 1/8	.40	3 1/2	2.45	22.8	4.56	7.5
1 1/4	.49	4 1/4	3	28	5.6	8
1 1/2	.57	4 3/4	3.55	33	6.6	9
1 3/4	.65	5	4.15	38	7.6	10
1 5/8	.80	5 1/2	4.85	44	8.8	11
1 7/8	.88	5 3/4	5.55	50	10	12
2	.95	6 1/4	6.30	55	11	12
2 1/16	1.17	7 1/4	8	72	14.4	14
2 1/8	1.40	7 3/4	9.85	92	18.4	15
2 1/4	1.70	8 1/4	11.95	111	22.2	17

COARSE LAID IRON TRANSMISSION WIRE ROPE

6x7

6 Strands, 7 Wires per Strand, around a Hemp Center.

Diameter in inches	List price per foot	Circumference in inches	Approximate wt. per foot	Approximate strength in tons of 2000 lbs.	Proper working loads in tons of 2000 lbs.	Diameter of drum or sheave in feet advised
9/32	\$0.03 1/4	1 1/4	.12 1/2	1.2	.24	3
5/16	.03 3/4	1 1/2	.15	1.7	.34	3.5
3/8	.04 1/2	1 3/4	.22	2.2	.44	4
7/16	.05 1/2	1 3/4	.30	2.6	.52	4.5
1/2	.06 1/4	1 3/4	.39	3.7	.74	5
9/16	.08 1/4	1 3/4	.50	4.8	.96	6
5/8	.10	2	.62	6	1.2	7
11/16	.12	2 1/4	.75	7.3	1.5	7.5
3/4	.14	2 1/4	.89	8.8	1.7	7.5
7/8	.18 1/2	2 3/4	1.20	12	2.4	9
1	.24	3	1.58	15	3	10.5
1 1/16	.30	3 1/4	2	19	3.8	12
1 1/8	.36	4	2.45	23	4.6	13
1 1/4	.43	4 1/4	3	28	5.6	15
1 1/2	.51	4 3/4	3.55	32	6.4	16

CLIMAX IRON ELEVATOR ROPES

8x19

8 Strands, 19 Wires per Strand, around a Hemp Center.

Diameter in inches	List price per foot	Circumference in inches	Approximate wt. per foot	Approximate strength in tons of 2000 lbs.	Proper working loads in tons of 2000 lbs.	Diameter of drum or sheave in feet advised
3/8	\$0.08	1 1/4	.20	2 1/4	.4	1
7/16	.08 1/2	1 3/4	.27	2 1/2	.5	1
1/2	.09 1/2	1 3/4	.35	3 1/2	.7	1
9/16	.11	2	.45	4 1/2	.82	1
5/8	.13 1/2	2 1/4	.56	5 1/4	1	1
3/4	.18	2 1/4	.80	7 1/2	1.50	1
7/8	.22	2 3/4	1.08	10 1/2	2.1	1
1	.29	3	1.42	13	2.6	1
1 1/16	.36	3 1/4	1.80	16 1/2	3.125	1
1 1/8	.44	3 1/2	2.20	20	4	1
1 1/4	.54	4	2.70	25 1/2	5	1
1 1/2	.62	4 1/4	3.19	30	6	1

These Ropes are extremely flexible, and are recommended for elevators having a reverse hand.

WE CARRY A COMPLETE STOCK OF

SWEDES IRON TILLER ROPES



Tiller Ropes are generally used on steamboats for steering Ropes, and also almost universally as Hand Ropes for starting and stopping Passenger and Freight Elevators.

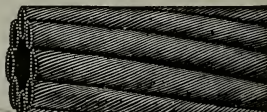
They are made similar to Hawser Laid Ropes (more properly Cable laid), viz.: six small standing Ropes are laid around a hemp heart, thus forming a Rope of 252 wires. Tiller Ropes are the most flexible of all Ropes.

Diam. in inches	Av. Wt. per Ft.	Price per Ft.	Diam. in inches	Av. Wt. per Ft.	Price per Ft.
1/4	.07	\$0.07 1/2	5/8	.43	\$0.17
3/8	.08	.08	3/4	.62	.22
1/2	.16	.09	7/8	.84	.27
5/8	.21	.10	1	1.10	.33
3/4	.28	.11 1/2	1 1/8	...	.39
7/8	.35	.14	1 1/4	...	.45

Diam. in inches	Av. Wt. per Ft.	Price per Ft.	Diam. in inches	Av. Wt. per Ft.	Price per Ft.
1/4	.07	\$0.11	5/8	.43	\$0.24
3/8	.11	.12 1/2	3/4	.62	.30
1/2	.16	.14	7/8	.84	.36
5/8	.21	.15	1	1.10	.43
3/4	.28	.17	1 1/8	...	.50
7/8	.35	.20	1 1/4	...	.56

CAST STEEL

ENGLISH STEEL TILLER ROPE



Tiller Ropes are used for steering ropes on steamers, hand ropes for elevators, and in any place where a smooth and flexible rope is required.

Each strand is composed of 18 wires laid around a hemp center, the strands varying.

Diameter	1 1/4	1 1/2	1	3/4	3/8
Per foot	\$0.37	.30	.27	.23	.16 1/2

WIRE SASH AND BELL CORD

Iron, Tinned and Galvanized

Trade Number	Diameter	Wt. per Ft. in Lbs.	Brk'g Strength in Lbs.	Price per Foot
		Iron	Iron	Swedes Iron
26	3/4	.100	2200	\$0.03
27	7/8	.076	1809	.02 1/2
27 1/2	1	.056	1417	.02 1/4
28	1 1/8	.025	790	.01 3/4
28 1/2	1 1/4	.014	510	.01 1/2
29	1 1/2	.006	262	.01 1/4

The wire cords specified in the above table are composed of six strands of seven wires each, laid around a cotton heart.

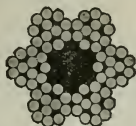
NOTE—When the Iron Rope listed on this page is galvanized, add 10 per cent to list price per foot, and apply GALVANIZED DISCOUNT. When made with WIRE CENTER, add 10 per cent to list price per foot. For ropes of more than 19 wires to the strand and less than 37 wires, unless specially listed herein, apply list for 37 wires.

WIRE ROPE IN CHICAGO AT ALL TIMES

GALVANIZED WIRE ROPES

GALVANIZED WIRE ROPES

6x7—6x12



6 Strands of 7 Wires each or 6 Strands of 12 Wires each 6 Strands, around a Hemp Center, with 7 or 12 Wires per Strand, for Ships' Riggings, Stays, Guys, etc.

Diam. Inches	Circ. Inches	Wt. per Ft. in Lbs.	Brk. Strain in Tons of 2000 Lbs.	Circum. in Hemp Rope Equal Strength	7 Wires Coarse Laid Price per Ft.	12 Wires Fine Laid Price per Ft.
1 3/8	5 1/2	4.85	42	11	\$0.44	\$0.46
1 1/2	5 5/8	4.42	38	10 1/2	.41	.43
1 1/4	5 1/4	4.15	35	10	.38	.40
1 1/2	5 3/4	3.55	30	9 1/2	.35	.37
1 1/2	4 1/2	3.24	28	9	.31 1/2	.33 1/2
1 1/4	4 1/4	3.00	26	8 1/2	.28 1/2	.30 1/2
1 1/4	4	2.45	23	8	.25	.26 1/2
1 1/4	3 3/4	2.21	19	7 1/2	.22 1/2	.24
1 1/4	3 1/2	2.00	18	6 1/2	.19 1/2	.21
1 1/4	3 1/4	1.77	16 1/2	6	.17 1/2	.18 1/2
1 1/4	3	1.58	14 1/2	5 1/2	.15	.16
1 1/4	2 3/4	1.20	11 1/2	5	.13	.....
1 1/4	2 1/2	1.03	9 1/2	4 1/2	.11	.....
1 1/4	2 1/4	.89	7 1/2	4 1/4	.09	.....
1 1/4	2	.62	5 1/2	4 1/2	.08	.....
1 1/4	1 3/4	.50	4 1/4	3 3/4	.07	.....
1 1/4	1 1/2	.39	3 1/2	3 1/2	.06	.....
1 1/4	1 1/4	.30	2 3/4	3 1/4	.05	.....
1 1/4	1 1/8	.22	1 1/2	2 1/2	.04 1/2	.....
1 1/4	1	.15	1 1/4	2	.03 1/2	.....
1 1/4	3/4	.125	1 1/2	1 1/4	.03	.....
1 1/4	3/8	.09	.99	1 1/2	.02 1/2	.....
1 1/4	3/8	.063	.79	1 1/4	.02 1/4	.....
1 1/4	1/2	.04	.61	1 1/8	.02	.....



GALVANIZED STEEL TOWING HAWSERS

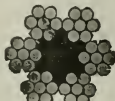
6x12

6 Strands, around a Hemp Center, each Strand consisting of 12 Wires around a Hemp Core

Diam. Inches	Circum. Inches	Approx. Wt. per Ft.	Approx. Strength in Tons of 2000 Lbs.	Size Man. Hawser	Price per Ft.
1 1/2	3 1/2	1.33	26	8 7/8	\$0.31
1 1/4	3 3/4	1.47	28	9 1/8	.33
1 1/4	4	1.63	31	10	.35
1 1/4	4 1/4	2.16	38	11	.38
1 1/4	4 1/2	2.16	41	11 1/2	.41
1 1/4	4 3/4	2.36	45	12	.44
1 1/2	5	2.76	53	12 1/2	.49
1 1/2	5 1/4	2.94	57	13	.53
1 1/2	5 1/2	3.23	61	13 1/2	.57
1 1/2	5 3/4	3.42	66	.....	.62
1 1/2	6	3.89	71	.....	.67
1 1/2	6 1/4	4.20	77	.....	.72
1 1/2	6 1/2	4.43	83	.....	.78

GALVANIZED STEEL YACHT RIGGING AND GUY ROPES

6x7—6x19



7 Wires



19 Wires

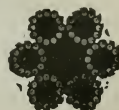
6 Strands, around a Hemp Center, with 7 or 19 Wires per Strand.

Diam. Inches	Circum. Inches	Approx. Wt. per Foot	Approx. Strength in Tons of 2000 Lbs.	Circum. Equal Strength Man. Rope	List Price per Foot	
					10 Wires per Strand	7 Wires per Strand
1/8	1	.15	3.2	3	\$0.10	\$0.04
3/8	1 1/4	.22	4.2	3 3/4	.10 1/4	.06
1/2	1 1/2	.30	5	4 1/4	.11	.07
5/8	1 3/4	.34	6	4 1/2	.11 1/2	.08
3/4	1 7/8	.39	7	4 3/4	.12	.08 1/2
7/8	2	.50	9	5 1/4	.13	.11
1	2 1/4	.62	11.7	6	.15 1/4	.13
1 1/8	2 1/2	.89	16.8	7	.20 1/4	.18 1/2
1 1/4	2 3/4	1.03	19	8	.23 1/2	.22
1 1/2	3	1.20	22	8 1/2	.26 1/4	.24 1/2
1 3/4	3 1/4	1.58	28	9	.34	.31 1/2
1 7/8	3 1/2	1.77	31	10	.38	.35
2	3 3/4	2	34	11	.41 1/4	.39 1/2
2 1/8	4	2.21	38	12	.46	.44
2 1/4	4 1/4	2.45	42	13	.50	.47

GALVANIZED IRON AND CAST STEEL COMPOUND RUNNING ROPE

6x12

6 Strands, around a Hemp Center, each Strand consisting of 12 Wires and a Hemp Core



Diam. Inches	Circum. Inches	Approx. Wt. per Ft.	Approx. Strength in Tons of 2000 Lbs.		List Price per Ft.	
			Iron	Cast Steel	Iron	Cast Steel
1/8	1	.10	.82	1.98	\$0.05 1/2	\$0.07
3/8	1 1/4	.14	1.3	2.85	.06	.07 1/4
1/2	1 1/2	.20	1.7	3.9	.06 1/2	.08 1/2
5/8	1 3/4	.26	2.2	5	.07	.09
3/4	1 7/8	.33	2.8	6.5	.08	.11
7/8	2	.42	3.6	8	.10	.14
1	2 1/4	.59	5.1	11.5	.12	.16 1/2
1 1/8	2 1/2	.68	6	13.5	.14 1/2	.20
1 1/4	2 3/4	.80	6.9	15.5	.17	.23
1 1/2	3	1.05	8.7	19.5	.20	.27
1 3/4	3 1/4	1.18	10.1	22.5	.22	.30

WE ARE EXPERTS ON WIRE ROPE. BE SURE AND LET US FIGURE ON YOUR REQUIREMENTS



GALVANIZED STEEL TOWING HAWSERS

6x37

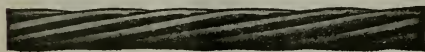
6 Strands, around a Hemp Center,
37 Wires per Strand

Diam. Inches	Circum. Inches	Approx. Wt. per Ft.	Approx. Strg. Tons 2000 Lbs.	Price per Ft.
3/4	2 1/4	.89	20	\$0.23
1 1/8	2 1/2	1.03	22	.26
1 1/4	2 3/4	1.20	26	.31
1 1/2	3	1.58	31.5	.37
1 5/8	3 1/4	1.77	38	.42
1 3/4	3 1/2	2.21	42	.48
1 7/8	3 3/4	2.45	47	.54
2	4	3.24	54	.60
2 1/8	4 1/4	3.55	66	.65
2 1/4	4 1/2	4.15	72	.71
2 3/8	4 3/4	4.42	76	.77
2 1/2	5	4.85	87	.84
2 5/8	5 1/4	5.13	97	.91
2 3/4	5 1/2	5.84	104	.98
2 7/8	5 3/4	6.34	112	1.05
3	6	6.30	125	1.12
3 1/8	6 1/4	6.65	132	1.20
3 1/4	6 1/2	7.06	140	1.28
3 3/8	6 3/4	8	155	1.35
3 1/2	7	8.36	171	1.44
3 3/4	7 1/4	8.82	182	1.52
3 1/2	7 1/2		188	1.60

This rope is only furnished galvanized.

GALVANIZED STRAND OR GUY ROD

Composed of 7 wires for Guys, Signals Cord,
Street Railways, Telephone Companies, Electric
Light Plants, Fencing, etc.



Approx. Diam.	Wt. per 1000 Ft., Lbs.	Approx. Strength, Lbs.	Price per 100 Ft.
1/2	510	8500	\$5.50
5/8	415	6500	4.50
3/4	295	5000	3.50
7/8	210	3800	2.50
1	125	2300	1.75
1 1/8	95	1800	1.50
1 1/4	75	1400	1.25
1 1/2	55	900	1.15
1 3/4	32	500	1.00
1 1/2	20	400	.80

For strands of larger diameter or of a greater
number of wires than given above, write for prices.
Galvanized strands made of wire having a tensile
strength of 60,000 to 350,000 pounds per square inch
can also be furnished.

GALVANIZED MAST ARM ROPE

For Arc Lights, etc. Composed of 9 Strands around
Cotton Center, 4 Wires per Strand

Diameter, Inches	Wt. per Ft. in Lbs.	Approx. Breaking Strain, Lbs	Price per Ft.
3/8	0.158	2,300	\$0.05
1/2	0.109	1,700	.03 1/2
1/4	0.070	1,100	.02 3/4

SEIZING STUFF

Made from best Charcoal Wire

Seven Wires, No.....	18	19	20	21
Wt. per 100 Ft.....	4	3	2 1/4	2
Price per 100 Ft.....	\$0.55	\$0.45	\$0.40	\$0.35

GALVANIZED STEEL MOORING LINES

6 Strands, around a Hemp Center, each Strand con-
sisting of 24 Wires around a Hemp Core.

Diam. Inches	Circum. Inches	Approx. Wt. per Ft.	Approx. Strength in Tons of 2000 Lbs.	List Price per Foot.
2 1/4	2 1/4	.78	14	\$0.22
1 1/2	2 1/2	.90	17	.25
1 1/4	2 3/4	1.05	20	.28
1 1/8	3	1.38	25	.35
1 1/2	3 1/4	1.54	27	.40
1 1/4	3 1/2	1.75	34	.45
1 1/8	3 3/4	1.93	38	.51
1 1/4	4	2.15	42	.57
1 1/8	4 1/4	2.62	50	.62
1 1/2	4 1/2	2.92	55	.67
1 1/4	4 3/4	3.10	63	.73
1 1/8	5	3.63	74	.80
1 1/2	5 1/4	3.86	76	.86
1 1/4	5 1/2	4.24	82	.93
1 1/8	5 3/4	4.48	88	1.00
2	6	5.09	98	1.06
2 1/8	6 1/4	5.51	106	1.14
2 1/4	6 1/2	5.81	113	1.22

GALVANIZED STEEL CABLES

For Suspension Bridges. Composed of 6 Strands
with Wire Center

Approx. Circum. Inches	Diam. Inches	Approx. Weight per Foot in Lbs.	Approx. Breaking Strain in Tons of 2000 Lbs.	Price per Foot
8 5/8	2 3/4	12.8	315	....
8 1/4	2 5/8	11.9	285	....
7 7/8	2 1/2	11.0	260	....
7 1/2	2 3/8	9.9	235	....
7 1/4	2 1/4	8.8	210	....
6 5/8	2 1/8	7.8	187	....
6 1/4	2	6.9	165	....
5 7/8	1 7/8	6.3	149	....
5 1/2	1 5/8	5.7	134	....
5 1/4	1 5/4	5.5	109	....
4 3/4	1 1/2	4.0	99	....
4 1/4	1 3/8	3.3	79	....
4	1 1/4	2.6	69	....

Prices upon application

Suspension Bridges have long since become recog-
nized as the most practical and economical
style of bridge that can be constructed, and are
particularly adapted for such places where a light
roadway or foot bridge is desired.

They possess the greatest strength and durabil-
ity. The Cables being made of so many wires
their safety is much greater than that style of
structure which depends upon the soundness of a
single piece of iron or steel.

Being suspended between towers there are no
supporting or intervening piers to be swept away
by floods or ice gorges.

BROBAS WIRE ROPE

YELLOW STRAND—Frederick Patent

It is approximately 25% stronger and equally as flexible as ordinary constructed rope

This form of construction admits of having a larger wire rope core than any other rope construction of a compound character increasing its strength about 25% over that of the ordinary rope construction.

It also avoids cutting and chafing of the strands by reason of the fact that all of the exterior and interior strands in BROBAS rope are so arranged that all tendencies of the strands to chafe and cut on each other are practically eliminated, thereby prolonging the life of rope over that of all other rope of compound type.

On account of the peculiar construction, it is able to withstand sudden shocks, heavy strains, and severe bending without effecting its elasticity up to the ultimate breaking strain of the ordinary constructed wire rope of the same diameter and quality, its actual breaking strain being about 25% greater than the ordinary rope construction.

Another advantageous feature of this construction is that the inner rope core lying in interstices of the outer strands tends in great degree to prevent the wires in outer rope from creeping which is very destructive to wire rope. We recommend it for drag-lines, ballast unloaders and where the rope is subject to sudden shocks, severe strains of both tensile and bending character.

Diam.	Approx. Wt.	Approx. Breaking Strain	Price
$\frac{5}{8}$	.73 $\frac{1}{2}$	23.	\$0.30
$\frac{3}{4}$	1.04	33.	.40
$\frac{7}{8}$	1.32	42.	.50
1	1.76	54.	.65
1 $\frac{1}{8}$	2.25	67.	.80
1 $\frac{1}{4}$	2.74	86.	.95
1 $\frac{3}{8}$	3.37	105.	1.15
1 $\frac{1}{2}$	4.25	118.	1.37

Prices on other grades of BROBAS brand on application.



"THE MOST POWERFUL OF THEM ALL."

JUPITER TRANSMISSION ROPE

Composed of five strands and a hemp center. Nineteen wires to the strand. Heart colored blue

Outside Diam. Inches	Minimum Size of Sheaves Feet	Approx. Breaking Strain Lbs.	Aver. Diam. of Manila, which Jupiter Replaces in Same Grooves Inches	Aver. Size of Plain Wire Rope Which Jupiter Replaces, Inches	Price per Ft.
1 $\frac{3}{8}$	6 $\frac{1}{2}$	50,000	2 $\frac{1}{8}$	1 $\frac{7}{8}$	\$0.40
1 $\frac{1}{4}$	6	38,300	2	1	.31
1 $\frac{1}{8}$	5	29,200	1 $\frac{3}{4}$	$\frac{7}{8}$	.26
1	4	20,800	1 $\frac{1}{2}$	$\frac{3}{4}$	.23
$\frac{7}{8}$	3 $\frac{1}{2}$	16,700	1 $\frac{1}{8}$	$\frac{11}{16}$	.21
$\frac{3}{4}$	3	14,000	1 $\frac{1}{4}$	$\frac{5}{8}$	.19
$\frac{5}{8}$	2	8,000	1	$\frac{1}{2}$	.15
$\frac{1}{2}$	1	3,700	$\frac{3}{4}$	$\frac{3}{8}$	.14

For price of six strand add twenty per cent to the above prices.

FLAT ROPES—Cast Steel

Price per Lb.	Width and Thickness	Weight per Ft.	Approx. Breaking Strain in Tons	Allowable Working Strains in Tons	Approx. Diam. of Round Cast Steel Rope of Equal Strength
\$0.28	$\frac{1}{2}$ x 7 in.	5.90 lbs.	89	17.8	1 $\frac{1}{8}$ in.
	$\frac{1}{2}$ x 6 in.	5.10 lbs.	77	15.4	1 $\frac{1}{16}$ in.
	$\frac{1}{2}$ x 5 in.	4.82 lbs.	72	14.4	1 $\frac{1}{8}$ in.
	$\frac{1}{2}$ x 4 in.	4.27 lbs.	64	12.8	1 $\frac{1}{4}$ in.
	$\frac{1}{2}$ x 4 $\frac{1}{2}$ in.	4.00 lbs.	60	12.0	1 $\frac{1}{2}$ in.
.28	$\frac{1}{2}$ x 4 in.	3.30 lbs.	50	10.0	1 $\frac{1}{4}$ in.
.29	$\frac{1}{2}$ x 3 in.	2.97 lbs.	45	9.0	1 $\frac{1}{8}$ in.
.30	$\frac{1}{2}$ x 3 in.	2.38 lbs.	36	7.2	1 in.
.30	$\frac{3}{4}$ x 5 $\frac{1}{2}$ in.	3.90 lbs.	55	11.0	1 $\frac{1}{8}$ in.
	$\frac{3}{4}$ x 5 in.	3.40 lbs.	50	10.0	1 $\frac{1}{4}$ in.
	$\frac{3}{4}$ x 4 in.	3.12 lbs.	47	9.4	1 $\frac{1}{8}$ in.
	$\frac{3}{4}$ x 4 in.	2.86 lbs.	43	8.6	1 $\frac{1}{2}$ in.
.31	$\frac{3}{4}$ x 3 $\frac{1}{2}$ in.	2.50 lbs.	38	7.6	1 in.
.32	$\frac{3}{4}$ x 3 in.	2.00 lbs.	30	6.0	$\frac{1}{8}$ in.
.33	$\frac{3}{4}$ x 2 $\frac{1}{2}$ in.	1.86 lbs.	28	5.6	$\frac{7}{8}$ in.
.34	$\frac{3}{4}$ x 2 in.	1.19 lbs.	18	3.6	$\frac{3}{4}$ in.

Unless order distinctly specifies to the contrary our rule for thickness applies to size of strand before sewing.

Made of iron or steel as desired. Prices on application.

Steel flat ropes are mostly used for hoisting purposes in very deep shafts as a matter of economy in power and in the initial cost of a hoisting plant.

We also furnish the right and left strands separate together with the sewing wire, thus permitting the sewing of ropes at place of use.



DURABLE WIRE CABLE LAID HAWSER

Composed of five ropes, with blue hemp centers,
five strands to the rope, seven wires to the strand

Diameter of each rope in inches before serv- ing	Approximate outside diameter of hawser after serving with marline	Approximate outside circumference after serving	Approximate breaking strain in pounds	Approximate weight per foot in pounds	Price per foot
--	---	--	--	--	----------------

CAST STEEL

$\frac{5}{8}$	$2\frac{5}{8}$	$8\frac{1}{4}$	103,000	3.80	\$1.00
$\frac{3}{4}$	$2\frac{7}{8}$	$7\frac{1}{4}$	80,000	3.20	.85
$\frac{1}{2}$	2	$6\frac{1}{4}$	60,000	2.59	.72 $\frac{1}{2}$
$\frac{7}{16}$	$1\frac{7}{8}$	6	50,000	2.30	.64
$\frac{3}{8}$	$1\frac{1}{2}$	$5\frac{3}{4}$	38,000	2.12	.55

EXTRA STRONG CAST STEEL

$\frac{5}{8}$	$2\frac{5}{8}$	$8\frac{1}{4}$	115,000	3.80	\$1.10
$\frac{3}{4}$	$2\frac{7}{8}$	$7\frac{1}{4}$	92,000	3.20	.90
$\frac{1}{2}$	2	$6\frac{1}{4}$	67,000	2.59	.80
$\frac{7}{16}$	$1\frac{7}{8}$	6	56,000	2.30	.70
$\frac{3}{8}$	$1\frac{1}{2}$	$5\frac{3}{4}$	42,000	2.12	.60

PLOUGH STEEL

$\frac{5}{8}$	$2\frac{5}{8}$	$8\frac{1}{4}$	128,000	3.80	\$1.20
$\frac{3}{4}$	$2\frac{7}{8}$	$7\frac{1}{4}$	105,000	3.20	1.00
$\frac{1}{2}$	2	$6\frac{1}{4}$	76,000	2.59	.87 $\frac{1}{2}$
$\frac{7}{16}$	$1\frac{7}{8}$	6	64,000	2.30	.75
$\frac{3}{8}$	$1\frac{1}{2}$	$5\frac{3}{4}$	48,000	2.12	.67 $\frac{1}{2}$

Other constructions furnished to order.

For galvanized wire add ten per cent to above prices.

CAST STEEL DURABLE WIRE HOISTING ROPE

Composed of five strands and a blue hemp center.
Nineteen wires to the strand

Diameter in inches be- fore serving	Approximate diameter after serving with marline	Approximate circum- ference after serving with Marline	Approximate breaking strain in tons of 2,000 pounds	Allowable working strain in tons of 2,000 pounds	Minimum size of drum or sheave in feet	Approximate weight per foot in pounds	Price per foot
$1\frac{3}{4}$	$2\frac{1}{2}$	$6\frac{5}{8}$	85	17.0	$7\frac{1}{4}$	4.88	\$1.05
$1\frac{5}{8}$	2	$6\frac{1}{4}$	72	14.4	$6\frac{1}{4}$	4.19	.86
$1\frac{1}{2}$	$1\frac{7}{8}$	$5\frac{7}{8}$	67	13.4	$5\frac{3}{4}$	3.60	.78
$1\frac{3}{8}$	$1\frac{3}{4}$	$5\frac{1}{2}$	55	11.0	$5\frac{1}{2}$	3.06	.66
$1\frac{1}{4}$	$1\frac{1}{2}$	$5\frac{1}{4}$	45	9.0	5	2.52	.59
$1\frac{1}{8}$	$1\frac{1}{4}$	$4\frac{3}{4}$	36	7.2	$4\frac{1}{2}$	2.07	.47
1	$1\frac{1}{8}$	$4\frac{1}{8}$	28.5	5.7	4	1.66	.40
$\frac{7}{8}$	$1\frac{1}{4}$	$3\frac{7}{8}$	22.3	4.4	$3\frac{1}{2}$	1.29	.31
$\frac{3}{4}$	$1\frac{1}{8}$	$3\frac{1}{2}$	15.7	3.14	3	1.12	.26
$\frac{5}{8}$	1	$3\frac{1}{4}$	11.2	2.24	$2\frac{1}{4}$	.80	.23
$\frac{3}{8}$	$\frac{7}{8}$	$2\frac{3}{4}$	9.0	1.80	$1\frac{3}{4}$	.60	.21
$\frac{1}{2}$	$\frac{3}{4}$	$2\frac{3}{8}$	7.2	1.44	$1\frac{1}{2}$	.49	.19
$\frac{7}{16}$	$\frac{11}{16}$	$2\frac{1}{4}$	5.8	1.16	$1\frac{1}{4}$	.40	.17
$\frac{3}{8}$	$\frac{9}{16}$	2	4.3	.86	1	.36	.15
$\frac{7}{16}$	$\frac{1}{2}$	$1\frac{3}{4}$	2.8	.56	$\frac{3}{4}$	.26	.14 $\frac{1}{2}$
$\frac{1}{4}$	$\frac{1}{2}$	$1\frac{1}{2}$	2.0	.40	$\frac{1}{2}$	.21	.14

For price of six strand or wire heart add
twenty per cent to the above list.

For galvanized wire add ten per cent to above
prices.

SPECIAL EXTRA STRONG DURABLE GRAIN SHOVEL ROPE

Composed of six strands and a blue hemp center. Nineteen wires to the strand

Diam. in In. Before Serving	Approx. Diam. After Serving with Marline	Approximate circumference After Serving with Marline	Approximate Breaking Strain in Tons of 2,000 lbs.	Allowable Working Strain in Tons of 2,000 lbs.	Minimum Size of Drum or Sheave in ft.	Approximate wt. per ft. in lbs.	Price per ft.
$\frac{3}{8}$	$\frac{3}{4}$	$2\frac{3}{8}$	5.60	1.12	1	.45	\$0.19 $\frac{1}{4}$
$\frac{1}{4}$	$\frac{5}{8}$	2	2.70	.54	$\frac{3}{4}$	.27	.18

PHOSPHOR-BRONZE WIRE ROPE.



Fig. 561M

HOISTING ROPE

With 6 Strands, 19 Wires Each, Hemp Center

Diameter inches	Estimated Breaking Strain lbs.	Proper Working Load lbs.	Minimum Size of Drum feet	Price per foot
$\frac{1}{8}$	500	50	...	\$0.06
$\frac{1}{4}$	1,000	100	...	.08
$\frac{3}{8}$	1,800	180	...	.12
$\frac{1}{2}$	3,000	300	$1\frac{1}{4}$	.15
$\frac{5}{8}$	5,000	500	$1\frac{1}{2}$	.22
$\frac{3}{4}$	6,500	650	$1\frac{3}{4}$	.26
$\frac{7}{8}$	8,000	1,000	2	.33
$1\frac{1}{8}$	12,000	2,000	3	.50
$1\frac{1}{4}$	18,000	3,500	$3\frac{1}{4}$	.70

Large Sizes and Wire Centers, Special Prices

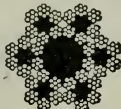


Fig. 563

Cut enlarged

TILLER ROPE

Cotton and Hemp Centers. Very Flexible

Diameter inches	Number of Wires	Estimated Breaking Strain lbs.	Price per foot
$\frac{1}{8}$	114	500	\$0.06
$\frac{1}{4}$	114	1,000	.08
$\frac{3}{8}$	252	1,500	.15
$\frac{1}{2}$	252	2,000	.18
$\frac{5}{8}$	252	3,500	.22
$\frac{3}{4}$	252	4,500	.26
$\frac{7}{8}$	252	6,000	.32
$1\frac{1}{8}$	252	8,000	.43
$1\frac{1}{4}$	252	11,000	.60

FERRY BLOCK AND FERRY TRAVELER

All Wrought Iron

The lightest, strongest and most durable Block made; can be taken apart, and parts replaced with ease. Made to fit any size rope.

Price.....each \$6.00

Ferry Traveler, with Single Common Sheaves.

Price.....each \$4.00

IRON AND STEEL FERRY ROPE

Possesses many advantages over hemp and manila ropes:

1st. Being lighter and more easily stretched across the river and put up.

2nd. Being perfectly round and smaller, the pulley blocks run more rapidly over the ropes, thus doing away with the sudden strain caused by checking (as with a hemp rope).

3rd. When properly put up they last for years, and require but little attention to keep in order.

For a **swinging ferry**, where the rope lies in the water, it does not rot, nor does it, like hemp, absorb water until it becomes water-logged and clumsy. Hemp rope, thus saturated, will have **four times** the weight of wire rope placed in the same position; thus in slack water there is no useless expenditure of the force of the current in carrying the boat across when wire rope is used.



Fig. 562

TRANSMISSION AND RIGGING ROPE.

With 6 Strands, 7 Wires to the Strand, Hemp Center

Diameter inches	Breaking Estimated Strain lbs.	Proper Working Load lbs.	Price per foot
$\frac{1}{4}$	1,500	250	\$0.10
$\frac{1}{8}$	2,500	400	.14
$\frac{3}{8}$	4,500	800	.20
$\frac{1}{2}$	6,000	1,000	.25
$\frac{5}{8}$	8,000	1,500	.32
$\frac{3}{4}$	12,000	2,000	.50
$1\frac{1}{8}$	18,000	4,500	.70

Large Sizes and Wire Centers, Special Prices



Fig. 564

Cut enlarged

SASH CORD

With 6 Strands, 7 Wires Each, Hemp Center

Diameter inches	Estimated Breaking Strain lbs.	Price per foot	Diameter inches	Estimated Breaking Strain lbs.	Price per foot
$\frac{1}{8}$	300	\$0.02 $\frac{1}{2}$	$\frac{3}{8}$	1,000	\$0.06
$\frac{1}{4}$	500	.03	$\frac{1}{2}$	1,200	.08
$\frac{3}{8}$	600	.04	$\frac{3}{4}$	1,500	.10

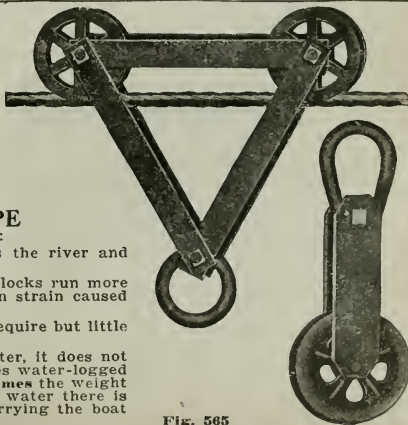


Fig. 565

WIRE ROPE CLIPS AND THIMBLES



Most Derrick Accidents are Caused by Defective Wire Rope Fastenings

Such accidents can be prevented to a large extent by using the

GENUINE "CROSBY" CLIP

for all wire rope fastenings. Its massive drop forged steel saddle, curved grooved rope channel, high fingers and powerful U-bolt grip both ropes securely without injuring the strands. A thick armor of galvanizing protects the clip against the weather.

Safest for Guy Ropes.

Safest for Hoisting Lines.

Safest Wherever Wire Ropes are Used.

Cheapest Because Safest.

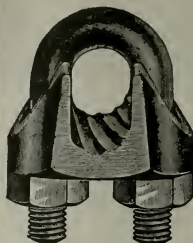
CONCRETE FORMS

In circular concrete reservoirs, tanks, bridge arches, water towers, etc., continuous and uniformly strong reinforcing is absolutely necessary. There can be no continuous reinforcing without a dependable splice—and "dependable" means drop forged steel. The Genuine Crosby Clip fills every requirement.



LIST PRICES

Diam. Rope inches	Price each	Diam. Rope inches	Price each
1/4	\$0.35	1 1/4	\$1.10
5/16	.35	1 1/2	1.25
3/8	.40	1 3/4	1.50
7/16	.45	1 7/8	3.50
1/2	.45	1 3/4	5.50
5/8	.55	2	7.50
3/4	.65	2 1/4	9.50
7/8	.75	2 1/2	11.50
1	.85	2 3/4	25.00
1 1/8	.95	3	35.00



THE "CARPENTER" CLIP

The bolt of this Clip is wrought iron; the plate is malleable. An efficient Clip in every respect. Many of them in use on the largest jobs in the country. In galvanized or japanned finish. State kind wanted.

Suitable for Wire Rope Diameter, inches	Price, each Black	Price, each Galvanized
1/4	\$0.25	\$0.30
5/16	.25	.30
3/8	.25	.30
1/2	.30	.35
5/8	.35	.40
3/4	.40	.50
7/8	.45	.55
1	.50	.60
1 1/8	.60	.70
1 1/4	.65	.75
1 3/8	.70	.80
1 1/2	.75	.85
1 3/4	3.50	4.00
2	4.00	4.40
2 1/4	5.00	5.50

STEEL WIRE ROPE THIMBLES



Width of Score inches	Galvanized per dozen	Plain Brass per dozen
3/16	\$0.60	\$1.50
1/4	.60	1.65
5/16	.72	1.75
3/8	.84	1.80
7/16	.96	1.95
1/2	1.08	2.10
5/8	1.20	2.25
3/4	1.32	2.40
7/8	1.56	3.00
1	1.68	....
1 1/8	2.16	....
1 1/4	3.36	....
1 1/2	3.96	....
1 3/4	6.00	....
1 7/8	7.80	....
2	9.00	....
2 1/4	11.40	....
2 1/2	13.20	....
2 3/4	19.00	....
3	25.00	....

TOW LINES, SWITCHING ROPES AND PUSH POLES

"BASLINE" AUTOWLINE

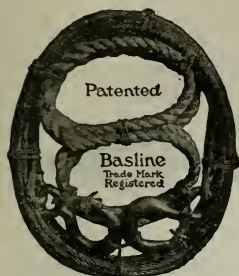


Fig. 644A. Autoline

One-quarter inch Yellow Strand Powersteel Wire Rope with Patented Saffle Hooks on each end especially constructed for towing autos.

This wonderful little towing line is manufactured of highest grade steel, $\frac{1}{4}$ inch diameter Yellow Strand Powersteel Wire Rope, about 25 feet long over all. This "over all" length includes two $\frac{1}{2}$ inch manila rope slings, which are joined to each end.

Weight, $4\frac{1}{2}$ lbs.—goes under a cushion.
Price each.....\$5.00



Fig. 644B. Truckline

POWERSTEEL TRUCKLINE

For Heavy Towing

Powersteel Truckline is made of $\frac{1}{2}$ inch Yellow Strand Powersteel Wire Rope, and is 18 feet long. It coils up flat and takes up practically no room. Its breaking strength is about 12 tons. It never fails in an emergency.

Price each.....\$9.00

"POWERSTEEL" LOCOMOTIVE SWITCHING ROPES

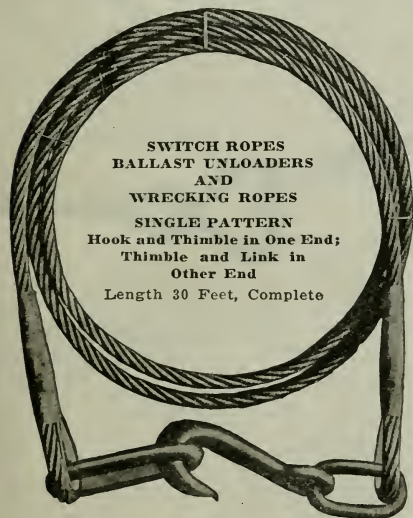


Fig. 644C

CRUCIBLE CAST STEEL WIRE SWITCHING ROPES

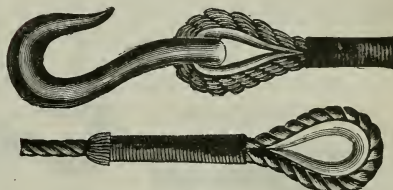


Fig. 644D

The single pattern has hook and thimble on one end and thimble and link in other end.

The double pattern has hook, thimble and link in one end and thimble and two links in other end.

The Rope is not included in the list prices below, which cover only the fittings, spliced in.

Diam. inches	Price each	Breaking Strain in Tons of 2000 lbs.	Diam. of Manila Rope of Equal Strength inches	Weight of Wire Switch Rope 30 feet Complete lbs.	Weight of Manila Switch Rope 30 feet Complete lbs.
1	\$23.70	50	4	85	270
$1\frac{1}{8}$	29.00	63	$4\frac{1}{4}$	115	315
$1\frac{1}{2}$	33.40	76	$4\frac{1}{2}$	135	365

Ballast Unloader Ropes and Wrecking Ropes made according to specifications and orders promptly executed.

SEE INDEX FOR RAILROAD, SWITCH AND WRECKING ROPES FITTED WITH LONG LINKS AND GRAB HOOKS

Dia. Rope inches	Price per set		Dia. Rope inches	Price per set	
	Single	Double		Single	Double
$1\frac{1}{4}$	\$25.00	\$30.00	$1\frac{1}{8}$	\$9.50	\$12.00
$1\frac{1}{8}$	21.25	25.75	1	7.00	9.00
$1\frac{1}{2}$	17.25	21.25	$\frac{7}{8}$	6.75	8.50
$1\frac{1}{8}$	13.25	16.75	$\frac{3}{4}$	4.00	5.50
$1\frac{1}{4}$	10.00	13.00			

PUSH POLES

Young White Cedar

10 feet long, 5 inch diameter center, $4\frac{1}{2}$ inch diameter ends, with $2x\frac{1}{4}$ inch iron band.

Price.....per doz. \$36.00

WIRE ROPE FASTENINGS

MADE OF BEST CHARCOAL IRON

CLOSED SOCKETS



Fig. 58A

Diameter Rope in inches	Iron or Steel Rope	
	Loose	Fastened
2 1/4	\$21.00	\$32.00
2	16.00	25.50
1 3/4	13.00	21.00
1 5/8	12.00	18.00
1 1/2	6.80	11.80
1 3/8	6.00	10.25
1 1/4	4.50	8.00
1 1/8	3.30	6.15
1	2.40	4.65
3/8	1.85	3.85
3/4	1.65	3.15
5/8	1.35	2.65
7/8	1.10	2.35
1 1/2	1.10	2.25
1 1/8	.85	2.00
3/8	.85	1.85
7/8	.70	1.60
1 1/4	.70	1.60

EXTRA HEAVY
DOUBLE SWIVEL
HOOK SOCKETS

Fig. 58B

Diam. of Rope in inches	For Iron and Steel Rope	
	Loose	Fastened
1 1/2	\$36.00	\$41.00
1 1/4	25.00	28.50
1 3/8	18.00	20.85
1	11.40	13.65
3/8	9.50	11.50
3/4	8.00	9.50
5/8	7.20	8.50
7/8	6.60	7.85
1 1/2	6.00	7.15
7/8	5.35	6.50
3/4	4.70	5.70

HOOKS AND THIM-
BLES

Fig. 58C

Diam. of Rope in inches	For Steel Rope		For Iron Rope	
	Loose	Fast'n'd	Loose	Fast'n'd
1 1/2	\$7.00	\$13.50	\$5.00	\$11.00
1 3/8	5.40	11.15	3.40	8.65
1 1/4	4.60	9.20	2.65	6.90
1 3/8	4.40	8.15	2.40	5.90
1	3.75	6.70	1.90	4.65
3/8	2.90	5.35	1.40	3.70
3/4	1.85	3.75	1.10	2.85
5/8	1.40	2.85	.85	2.20
7/8	1.10	2.40	.75	1.95
1 1/2	.80	2.05	.65	1.80
7/8	.75	1.95	.60	1.70
3/8	.70	1.85	.55	1.60
7/8	.65	1.75	.50	1.50
1 1/4	.65	1.75	.50	1.50

HOOK AND SOCKET



Fig. 58E

Diam. of Rope in inches	Iron or Steel Rope	
	Loose	Fast'n'd
2 1/4	\$23.00	\$34.00
2	16.50	26.00
1 3/4	15.50	23.50
1 5/8	13.00	19.00
1 1/2	8.00	13.00
1 3/8	7.50	11.75
1 1/4	6.10	9.60
1 3/8	4.50	7.35
1	3.15	5.40
3/8	2.50	4.50
3/4	2.10	3.60
5/8	1.65	2.95
7/8	1.35	2.60
1 1/2	1.35	2.50
7/8	1.00	2.15
3/8	1.00	2.00
7/8	.85	1.75
1 1/4	.85	1.75

OPEN SOCKETS



Fig. 58D

Diam. of Rope in inches	For Steel Rope		For Iron Rope	
	Loose	Fast'n'd	Loose	Fast'n'd
1 1/2	\$14.50	\$19.50	\$12.50	\$17.50
1 3/8	12.30	16.55	10.25	14.50
1 1/4	10.00	13.50	8.00	11.50
1 3/8	8.25	11.10	6.25	9.10
1	6.50	8.75	4.60	6.85
3/8	5.25	7.25	3.70	5.70
3/4	3.85	5.35	3.00	4.50
5/8	2.90	4.20	2.30	3.60
7/8	2.45	3.70	2.00	3.25
1 1/2	2.10	3.25	1.95	3.10
7/8	1.70	2.85	1.55	2.70
3/8	1.65	2.65	1.50	2.50
7/8	1.45	2.35	1.25	2.15
1 1/4	1.45	2.35	1.25	2.15

SISTER HOOKS



Fig. 58F

Diam. of Rope in inches	For Steel Rope		For Iron Rope	
	Loose	Fast'n'd	Loose	Fast'n'd
1 1/2	\$7.00	\$13.50	\$5.00	\$11.00
1 3/8	5.40	11.15	3.40	8.65
1 1/4	4.60	9.20	2.65	6.90
1 3/8	4.40	8.15	2.40	5.90
1	3.75	6.70	1.90	4.65
3/8	2.90	5.35	1.40	3.70
3/4	1.85	3.75	1.10	2.85
5/8	1.40	2.85	.85	2.20
7/8	1.10	2.40	.75	1.95
1 1/2	.80	2.05	.65	1.80
7/8	.75	1.95	.60	1.70
3/8	.70	1.85	.55	1.60
7/8	.65	1.75	.50	1.50
1 1/4	.65	1.75	.50	1.50



Fig. 58G

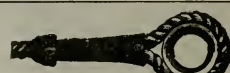
OVAL AND ROUND THIMBLES,
SPLICED IN

Fig. 58H

Diam. Rope, inches	1 3/4	1 1/2	1 1/4	1 3/8	1	3/4	5/8	3/8	7/8	1 1/2	7/8	3/8	7/8	1 1/4
For Steel Rope, ea.	\$8.50	6.50	4.70	3.90	3.00	2.55	2.00	1.55	1.30	1.25	1.20	1.15	1.10	1.10
For Iron Rope, ea.	\$7.00	6.00	4.35	3.65	2.85	2.40	1.85	1.45	1.20	1.15	1.10	1.05	1.00	1.00

CHAIN



COMMON STRAIGHT LINK COIL CHAIN

This grade is made of first-class iron, and welded by experienced workmen. It is good merchantable Chain for general use.

Size	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1	1 1/16	1 1/8	1 3/16	1 1/4
Breaking Test, lbs.....	1400	2400	5000	7000	9600	12400	15600	20000		30000		40000		50000		65000		80000
Proof Test, lbs.	750	1200	2500	3500	4500	6200	7800	9200		15000		20000		25000		32500		40000
Safe Working Load, lbs....	465	800	1650	2300	3200	4000	5000	6000		10000		13000		16000		21000		26000
Outside Length Links, inches.	1 1/8	1 1/4	1 1/2	1 5/8	2 1/8	2 1/4	2 3/8	2 1/2	3 1/8	3 1/2	3 3/4	4 1/4	4 1/2	4 3/4	5 1/8	5 3/8	5 7/8	6 1/2
Outside Width Links, inches.	7/8	1	1 1/8	1 1/4	1 1/2	1 5/8	1 3/4	2 1/8	2 1/4	2 3/8	2 1/2	3	3 1/4	3 1/2	3 3/4	3 7/8	4 1/8	4 1/2
Links per foot.	13	12	11	10	9	8	7 1/2	7	6 1/2	5 1/2	5 1/4	5	4 7/8	4 1/2	4 1/4	4 1/8	3 7/8	3 5/8
No. feet per 100 lbs.....	200	133	90	64	50	38	30	24	20	17	14 1/2	12 1/2	11	10	9	7 7/8	7	6 1/2
Weight in lbs. per 100 feet..	50	75	110	155	200	265	325	420	500	590	700	800	900	1000	1100	1300	1400	1500
Price per lb.																		

"BB" COIL CHAIN

Tested and certificate furnished. This Chain is made of extra quality iron, which will stand a tensile strain of 52200 lbs. to the square inch. It is welded with extra care, and dollyed to make welds smooth.

Size	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	1	1 1/16	1 1/8	1 1/4
Breaking Test, lbs.....	1540	2640	5500	7700	10560	13640	17160	21120	25300	31300	35640	41360	54200	64900	80900	
Proof Test, lbs.....	770	1320	2750	3850	5280	6820	8580	10560	12650	15180	17820	20680	27100	32450	40150	
Safe Working Load, lbs....	510	880	1830	2500	3500	4400	5700	7000	8000	10000	11500	13500	18000	21000	26000	
Outside Length Links, inches	1 1/8	1 1/4	1 1/2	1 5/8	2 1/8	2 1/4	2 3/8	3 1/8	3 1/2	3 3/4	4	4 1/4	4 7/8	5 1/8	5 7/8	
Outside Width Links, inches	7/8	1	1 1/8	1 1/4	1 1/2	1 5/8	1 3/4	2	2 1/8	2 1/4	2 3/8	2 1/2	3	3 1/4	3 7/8	4 1/4
Links per foot.....	14	13	11 3/4	11	9 3/4	8 3/4	8	7 1/4	6 3/4	5 3/4	5 1/2	5 1/4	4 3/4	4 1/4	3 3/4	
No. feet per 100 lbs.....	182	125	87	60	47	36	30	24	20	17	14	12 1/2	10	8	6 1/2	
Weight in lbs. per 100 feet.	55	80	115	165	215	275	330	425	515	600	700	775	1000	1250	1500	
Price per lb.																

CHAIN



Owing to the almost daily fluctuations in market on chain we are unable to insert list prices. Our stocks, however, are always complete and we will be pleased to quote the lowest possible price on request.

"CRANE" OR "BBB" CHAIN

Tested and certificate furnished. This Chain is made of refined and re-rolled iron, that is very tough and fibrous, and will stand a tensile strain of 53800 lbs. to the square inch. It is welded with special care and dollied. This is a chain that may be depended upon where strength and durability are required.

Size	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	1	1 1/8	1 1/4
Breaking Test.....lbs.	1800	3000	6400	8850	12200	15700	19740	24300	29100	34950	41000	47550	62400	74600	92350
Proof Test....."	900	1500	3200	4425	6100	7850	9870	12150	14550	17475	20500	23780	31200	37300	46175
Safe Working Load....."	600	1000	2100	2900	4000	5000	6500	8000	9700	11600	13500	15500	20800	24800	30700
Outside Length Links.....in.	1 1/2	1 1/2	1 1/2	2 1/4	2 1/4	2 1/2	2 1/2	3 1/8	3 3/8	3 3/4	4	4 1/4	4 3/4	5 1/4	5 3/4
Outside Width Links....."	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2	2 1/8	2 1/4	2 1/2	2 3/4	3	3 1/2	3 3/4
Links.....per ft.	14	13	11 1/2	11	9 3/4	8 3/4	8	7 1/4	6 3/4	5 3/4	5 1/4	4 3/4	4 1/4	3 3/4	3 1/4
No. Feet.....per 100 lbs	182	125	87	60	47	36	30	24	20	17	14	12 1/2	10	8	6 1/2
Wt. in lbs.....per 100 ft.	55	80	115	165	215	275	330	425	515	600	700	775	1000	1250	1500
Price.....per lb.															

"DREDGE" CHAIN

Tested and certificate furnished. This is the best Chain made. The iron used is special Dredge quality, refined and re-rolled. It is tough and fibrous, and made hard to prevent wearing rapidly. This iron will stand a tensile strain of 54500 lbs. to the square inch. The welding of our Dredge quality Chain is entrusted only to the most experienced workmen, and none but those thoroughly competent and reliable are permitted to make this grade of chain. It is carefully inspected both before and after testing.

Size	3/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
Breaking Test.....lbs.	4000	6000	9000	12000	16000	20000	25000	36000	49000	62500	80000	96000	140000	185000	225000
Proof Test....."	1600	3400	4700	6600	8800	11000	13000	18000	24000	32000	39000	48000	69000	96000	120000
Safe Working Load....."	1330	2000	3000	4000	5330	6660	8330	12000	16330	20830	26660	32000	46660	61630	75000
Outside Links Lgth. in.	1 1/2	1 1/2	2 1/4	2 1/4	2 3/4	2 3/4	3	3 1/2	4	4 1/2	5 1/4	5 1/2	7	8	9 1/4
Outside Wd. Lgth. in.	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2 1/2	2 1/2	3 1/4	3 3/4	4 1/4	5	5 1/2	6 1/2
Wt. per Ft.....lbs	1 1/2	1 1/2	1 1/2	2 1/4	2 3/4	3 1/4	4 1/4	6	8	10 1/2	13 1/2	16 1/2	24	32	42
Price.....per lb.															

SPECIAL STEEL LOGGING CHAIN

This Special Steel Chain is the result of a long series of experiments to obtain the greatest possible strength. Each piece is tested before it is shipped from the mill, and we recommend it as especially adapted to log loading and all other purposes where the highest quality chain is required.

Size	Inches	1/4	5/16	3/8
Breaking Test.....lbs.		5800	7500	11000
Proof Test....."		2900	3750	5500
Safe Working Load....."		1900	2500	3600
Outside Length Links.....inches		1 1/2	1 1/2	2
Outside Width Links....."		1	1 1/8	1 1/4
Weight per Foot.....lbs.		1 1/2	1 1/2	1 1/2
Links.....to lb.		14	12	11
Price.....per lb.				

FOR CHAIN AND ANCHOR SHACKLES, SEE INDEX

TWIST COIL CHAIN

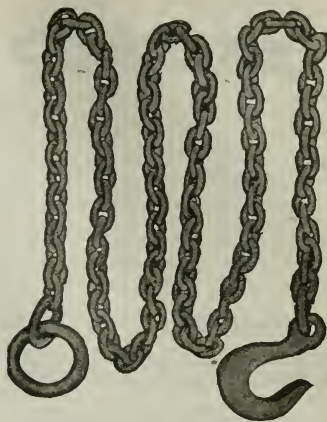


Twist Coil Chain made in all sizes up to and including $\frac{5}{8}$ inch. Prices upon receipt of specifications.

STUD LINK CABLE CHAIN



Size Chain inches	Size Links inches	Average Weight per Fathom, lbs.	Proof Test Tons
$\frac{3}{4}$	$4\frac{3}{4} \times 2\frac{3}{4}$	33	$10\frac{1}{8}$
$\frac{1}{2}$	$4\frac{1}{4} \times 3$	38	12
$\frac{7}{8}$	$5 \times 3\frac{1}{4}$	49	$13\frac{3}{4}$
$\frac{1}{2}$	$5\frac{1}{2} \times 3\frac{1}{2}$	55	$15\frac{1}{4}$
1	$5\frac{3}{4} \times 3\frac{3}{4}$	61	18
$1\frac{1}{16}$	$6\frac{1}{4} \times 3\frac{7}{8}$	69	$20\frac{3}{8}$
$1\frac{1}{8}$	$6\frac{1}{2} \times 4\frac{1}{4}$	74	$22\frac{1}{2}$
$1\frac{3}{16}$	$6\frac{3}{4} \times 4\frac{1}{4}$	81	$25\frac{1}{2}$
$1\frac{1}{4}$	$7\frac{1}{8} \times 4\frac{1}{2}$	90	$28\frac{1}{10}$
$1\frac{5}{16}$	$7\frac{3}{8} \times 4\frac{3}{4}$	97	31
$1\frac{3}{8}$	$7\frac{3}{4} \times 4\frac{3}{4}$	110	34
$1\frac{7}{8}$	$8\frac{1}{8} \times 5\frac{1}{8}$	113	$37\frac{1}{8}$
$1\frac{1}{2}$	$8\frac{1}{2} \times 5\frac{3}{8}$	127	$40\frac{1}{2}$
$1\frac{9}{16}$	$8\frac{3}{4} \times 5\frac{5}{8}$	143	44
$1\frac{5}{8}$	$9\frac{1}{4} \times 5\frac{7}{8}$	150	$47\frac{1}{2}$
$1\frac{11}{16}$	$9\frac{3}{8} \times 6$	157	$51\frac{1}{8}$
$1\frac{3}{4}$	$10 \times 6\frac{1}{4}$	173	$55\frac{1}{10}$
$1\frac{7}{8}$	$10\frac{1}{2} \times 6\frac{3}{4}$	203	$63\frac{3}{8}$
$1\frac{15}{16}$	$10\frac{3}{4} \times 7$	215	$67\frac{1}{2}$
2	$11\frac{1}{8} \times 7\frac{1}{4}$	233	72
$2\frac{1}{16}$	$11\frac{1}{2} \times 7\frac{1}{2}$	254	$76\frac{5}{10}$
$2\frac{1}{8}$	$12 \times 7\frac{3}{4}$	276	$81\frac{1}{4}$
$2\frac{3}{16}$	$12\frac{1}{2} \times 8$	290	$86\frac{1}{8}$
$2\frac{1}{4}$	$13 \times 8\frac{1}{4}$	300	91



CHAIN SLINGS

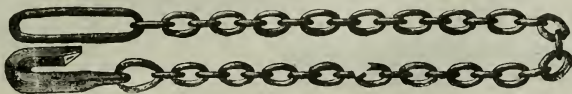
Made of any grade and size desired. We recommend our Dredge as the most desirable. Fitted with any style Hooks or Rings. The actual breaking strain is twice the test.

The safe working load two thirds the test.

For table of tests, see index.

RAILROAD SWITCH, OR WRECKING CHAIN

Grab Hook on One End, Long Link on the Other End



Standard Sizes: $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$ inch

Pittsburg Proof.....per lb. \$..... BBper lb. \$.....
 BBBper lb. \$..... Dredgeper lb. \$.....

LOG, OR BINDING CHAIN

With Grab and Bunk Hooks



Also with Ring and Swivel

In Ordering, Specify Size and Length of Chain, Style and Length of Hooks Wanted

WE CAN FURNISH ANY STYLE CHAIN SLINGS. SEND IN YOUR SPECIFICATIONS FOR PRICES.

MACHINE CHAIN



No.	American Gauge	Weight 100 feet	List 100 feet
6-0	9-32	68	\$21.00
5-0	1-4	61	18.00
4-0	7-32	50	15.00
3-0	5	40	14.00
2-0	6	34	13.00
0	7	28	12.50
1	8	23	12.00
2	9	20	11.50
3	10	15	11.00

PLUMBERS' CHAINS, HARD BRASS



Safety Links
Price per Box of 12 Yards

No.	Brass	Nickel or Silver	No.	Brass	Nickel or Silver
000	\$1.15	\$1.25	2	\$2.30	\$2.40
00	1.25	1.35	3	3.15	3.30
0	1.50	1.60	4	3.65	3.80
1	1.85	1.95	..	....	....

SASH CHAIN, STEEL
See Index for Other Styles



No.	For Sash lbs.	Polished per 100 feet	Copper Plated or Galv. 100 feet
0	180	\$6.50	\$7.25
1	130	4.20	4.95
2	80	3.60	4.35

Put up 500 Feet on a Reel

CABLE CHAINS



Cut of No. 40, Actual Size

No.	For Sash lbs.	Steel per foot	Copper per foot
110	400	\$0.17	\$0.23
10	250	.14	.17
30	125	.10	.12
40	75	.09	.11

No.	Steel per foot	No.	Steel per foot
6	\$0.35	50	\$0.22
60	.25	115	.16
55	.20	...	....

No. 75. Brass bell hangers' chain. Per foot\$0.11

JACK CHAINS



Price per Box of 12 Yards

No.	Iron	Brass	No.	Iron	Brass
8	\$0.95	\$5.25	14	\$0.40	\$1.35
9	.90	4.25	15	.35	1.00
10	.80	3.50	16	.30	.86
11	.55	2.55	17	.30	.82
12	.44	2.05	18	.28	.60
13	.42	1.70	19	.27	.54



Triumph

Size	Weight per 100 feet	Price per 100 feet	Size	Weight per 100 feet	Price per 100 feet
4	6 1/2	\$2.75	0	16 1/2	\$4.00
3	8	2.90	00	20 1/2	4.50
2	10	3.10	000	26	5.25
1	12 1/2	3.50	...	....	....



Brown

Size	Weight per 100 feet	Price per 100 feet	Size	Weight per 100 feet	Price per 100 feet
4	5	\$2.75	0	12	\$4.00
3	6 1/2	2.90	00	16 1/2	4.50
2	8	3.10	000	19 1/2	5.25
1	9 3/4	3.50	...	....	....



American

Size	Weight per 100 feet	Price per 100 feet	Size	Weight per 100 feet	Price per 100 feet
4	8	\$2.75	0	12	\$4.00
3	9	2.90	00	16 1/2	4.50
2	9 1/2	3.10	000	17	5.25
1	11	3.50	...	....	....

BRIGHT COIL CHAIN



German

Size	Weight per 100 feet	Price per 100 feet	Size	Weight per 100 feet	Price per 100 feet
5	7	\$6.50	1	19 1/2	\$7.80
4	8 3/4	6.60	0	21	8.80
3	10 1/2	6.80	00	29	10.00
2	15	7.20	000	36	11.00

FOR SASH PULLEYS, FASTENERS AND WEIGHTS, SEE INDEX

DROP FORGED STEEL MISSING LINKS

Size, inch	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2
Plain, per dozen	\$1.00	\$1.10	\$1.20	\$1.35	\$1.50	\$2.00	\$3.35
Galvanized, per dozen	1.35	1.45	1.60	1.80	2.10	3.00	4.50
U. S. Government Test, lbs.	5,580	8,300	11,200	13,980	15,900	23,900	34,100

Size, inches	$\frac{3}{8}$	1	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	4
Plain, per dozen	\$5.00	\$7.00	\$16.00	\$21.50	\$29.40	\$36.00	\$45.00
Galvanized, per dozen	6.50	9.00	19.00	25.00	34.00	42.25	52.00
U. S. Government Test, lbs.	37,100	52,600	.....	.....	.....	.....	.....

ACME CONNECTING LINKS

For Connecting and Repairing Chain

DROP FORGED

LIST OF REGULAR SIZES

Size inch	Outside Measurements inches	Weight pounds	Price Self-colored per doz.	Price Galvanized per doz.
$\frac{3}{8}$	1 $\frac{3}{4}$ x 1 $\frac{1}{2}$	$\frac{1}{4}$	\$0.75	\$0.96
$\frac{1}{2}$	1 $\frac{1}{2}$ x 1 $\frac{1}{2}$	$\frac{3}{4}$	.90	1.20
$\frac{3}{4}$	1 $\frac{1}{4}$ x 1 $\frac{3}{4}$	1	1.05	1.44
$\frac{1}{2}$	2 x 1 $\frac{1}{2}$	2	1.35	1.80
$\frac{3}{4}$	2 $\frac{1}{4}$ x 1 $\frac{3}{4}$	3 $\frac{1}{2}$	1.56	2.10
$\frac{1}{2}$	2 $\frac{1}{2}$ x 1 $\frac{1}{2}$	4 $\frac{1}{2}$	1.80	2.55
$\frac{3}{4}$	2 $\frac{3}{4}$ x 1 $\frac{3}{4}$	6 $\frac{1}{2}$	2.04	3.00
$\frac{1}{2}$	3 $\frac{1}{4}$ x 2 $\frac{1}{2}$	9	2.34	3.45
$\frac{3}{4}$	3 $\frac{3}{4}$ x 2 $\frac{1}{2}$	14 $\frac{1}{4}$	3.60	5.25
$\frac{1}{2}$	4 $\frac{1}{4}$ x 3	20	5.55	8.25
1	4 $\frac{3}{4}$ x 3 $\frac{1}{2}$	29	7.50	11.25

THE KEYSTONE CONNECTING LINK

For connecting new or repairing broken chains of all kinds—is composed of two corresponding halves centrally pivoted on the same axis. As shown by the illustration herewith, the inner flat face of each member is pivoted with a projecting lug and recess, so that when closed and in use they mutually interlock, and by abutting against each other, lateral displacement of the two halves, and their consequent spreading or parting—is rendered impossible. The Keystone Link is Drop Forged from an especially tough grade of bar steel, is the only one so made, and must not be confused with similar devices which are simply malleable iron castings.

PRICE LIST "KEYSTONE" CONNECTING CHAIN LINKS

Size, inches	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2
Forge finish, per dozen	\$ 2.00	2.25	2.50	3.25	4.00	7.50	.....

Size, inches	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	4
Forge finish, per dozen	\$10.00	12.50	15.00	17.50	20.00	.....	.....

Sizes up to $\frac{1}{2}$ inch packed one dozen in a box, or shipped in bulk if desired.

STEEL COLD SHUTS

Sizes, inches	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{2}$	2	3	4	5
Per 100	\$3.20	4.20	5.00	6.00	9.00	13.20	26.00	42.00	64.00	.....

BRIGHT LINKS

Sizes, inches	$\frac{5}{16} \times 1 \frac{1}{2}$	$\frac{3}{8} \times 1 \frac{5}{8}$	$\frac{7}{16} \times 1 \frac{3}{4}$	$\frac{1}{2} \times 2$	$\frac{5}{8} \times 2 \frac{1}{2}$
Per gross	\$2.60	3.80	6.00	9.00	17.00

BUNK AND GRAB HOOKS

Sizes, inches	Steel Bunk Hooks or Grab Hooks, per dozen	Price
$\frac{5}{8}$	Steel Bunk Hooks or Grab Hooks	\$ 2.00
$\frac{3}{4}$	Steel Bunk Hooks or Grab Hooks	2.75
$\frac{1}{2}$	Steel Bunk Hooks or Grab Hooks	3.50
$\frac{3}{8}$	Steel Bunk Hooks or Grab Hooks	4.50
$\frac{1}{4}$	Steel Bunk Hooks or Grab Hooks	7.25
$\frac{3}{16}$	Steel Bunk Hooks or Grab Hooks	10.00

Fig. 65B
Bright LinkFig. 65E
Steel Grab Hook

Fig. 65A



Fig. 752

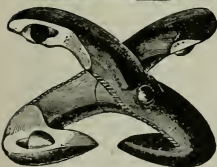


Fig. 65E

Fig. 65C
Cold ShutFig. 65D
Steel Bunk Hook

INGERSOLL-ROGLER STRAIGHT LINE AIR COMPRESSORS

Class ER-1 Steam Driven Type

Air Pressure 15-125 Pounds

Single Stage Air, Double Acting, Dust Proof Enclosed Construction, Automatic Lubrication. Ingersoll-Rogler Inlet and Discharge Valves. This machine will be furnished with tight and loose pulleys on 6 inch and 8 inch stroke sizes, on special order, at extra cost.

This machine can be furnished complete with motor and short belt drive attachment as a complete electrical unit.



LIST PRICES

Cylinder Inches		R. P. M.	Piston Displacement Cu. Ft. per Min.	Air Pres. Designed for lbs. Gage	Brake H. P. Required at Motor Including Belt Loss	Belt Wheel inches	
Diam.	Stroke					Diam.	Face
6	6	275	52	80-125	7 - 9	36	5 1/2
7	6	275	72	50-100	9 1/2 - 12	36	5 1/2
8	6	275	94	25-50	10 - 12	36	5 1/2
9	6	275	121	10-25	10 - 12	36	5 1/2
8	8	250	113	80-125	17 1/2 - 21	45	8 1/2
9	8	250	145	60-100	21 - 24	45	8 1/2
10	8	250	179	25-60	19 - 26	45	8 1/2
12	8	250	258	15-25	16 - 24	45	8 1/2
10	10	235	210	80-125	33 - 39	58	10 1/2
12	10	235	304	50-100	40 - 53	58	10 1/2
14	10	235	415	20-50	31 - 52	72	14 1/2
12	12	220	340	80-125	56 - 62	72	14 1/2
14	12	220	464	45-100	58 - 79	72	14 1/2
17	12	220	688	30-45	69 - 79	72	14 1/2

LIST PRICES

Compressor Less Foundation Bolts	Extra for "RA-39" Unloader	Extra for "RA-39" Unloader and Relief Valves	Extra for Foundation Bolts, Nuts and Washers	Extra for Short Belt Drive				Extra for Tight and Loose Pulleys
				Regular With Belt	Overhead Motor Drive With Belt	Regular Less Belt	Overhead Motor Drive Less Belt	
\$290.00	\$25.00	\$75.00	\$2.00	\$60.00	\$125.00	\$35.00	\$100.00	\$40.00
310.00	25.00	75.00	2.00	60.00	125.00	35.00	100.00	40.00
330.00	25.00	75.00	2.00	60.00	125.00	35.00	100.00	40.00
350.00	30.00	80.00	2.00	60.00	125.00	35.00	100.00	40.00
430.00	25.00	75.00	3.00	95.00	160.00	50.00	115.00	95.00
460.00	30.00	80.00	3.00	95.00	160.00	50.00	115.00	95.00
490.00	30.00	80.00	3.00	95.00	160.00	50.00	115.00	95.00
550.00	40.00	90.00	3.00	95.00	160.00	50.00	115.00	95.00
635.00	30.00	80.00	4.00	130.00	200.00	60.00	130.00	115.00
755.00	40.00	90.00	4.00	130.00	200.00	60.00	130.00	115.00
825.00	*	100.00	4.00	130.00	200.00	60.00	130.00	115.00
995.00	*	90.00	5.00	220.00	300.00	95.00	175.00	.....
1,065.00	*	100.00	5.00	220.00	300.00	95.00	175.00	.....
1,265.00	*	100.00	5.00	220.00	300.00	95.00	175.00	.....

FOR PNEUMATIC HAMMERS, GAUGES, ETC., SEE INDEX

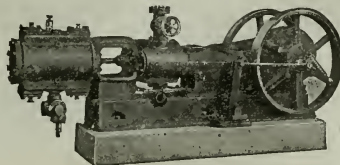
INGERSOLL-ROGLER STRAIGHT LINE AIR COMPRESSORS

Class FR-1 Steam Driven Type

Air Pressure 15-125 Pounds

Steam Pressure 80-120 Pounds

Single Stage Air, Double Acting, Dust Proof Enclosed Construction, Automatic Lubrication
 "Ingersoll-Rogler" Inlet and Discharge Valves, Balanced Piston Steam Valve, Automatic Cut-Off
 Control.



LIST PRICES

Size of Cylinder inches			Revolutions per Minute	Piston Dis- place- ment Cu. Ft. per Minute	Air Pres. Rating lbs. Gage	I. H. P. in Steam Cylin- der	Over-all Dimensions Ft.-In.		
Steam Diameter	Air Diameter	Stroke					Length	Width	Height from Floor
7	7	6	350	67	80-125	9-10	2-2	2-2	2-6
7	7	6	350	92	55-100	11-13	2-2	2-2	2-6
7	7	6	350	120	30- 50	12-14	2-2	2-2	2-6
9	9	8	300	136	80-125	21-25	10-2	3-2	4-0
9	9	8	300	173	65-100	24-29	10-3	3-2	4-0
9	9	8	300	215	35- 60	24-30	10-5	3-2	4-0
12	12	10	237	245	80-125	39-46	12- 0	3-2	4-8
12	12	10	237	355	60-100	51-62	11-10	3-2	4-8
12	12	12	250	386	80-125	61-70	12- 8	4-1	5-6
14	14	12	250	528	45-100	66-88	13- 9	4-1	5-9

LIST PRICES

Complete Compressor with "A-39" Unloader and Fly Wheel Governor	Complete Compressor with "A-39" Unloader and Fly Wheel Governor	Complete Compressor With Variable Speed Governor	Extra for Foundation Bolts, Nuts and Washers	Extra for Metallic Packing *					
				Cook's		Morris'		Tripp's	
				Saturated Steam		Super- heated Steam	On Air Piston Rods	On Steam Piston Rods	On Air Piston Rods
				Steam Piston Over 15 lbs. and Under	Steam Piston Over 15 lbs. Pressure	Steam Rod All Steam Pressures		On Air Piston Rods	On Air Piston Rods
\$625.00	\$650.00	\$620.00	\$3.00	\$54.00	\$63.00	\$72.00	\$18.00	\$51.00	\$75.00
\$445.00	\$470.00	\$440.00	3.00	54.00	63.00	72.00	18.00	51.00	75.00
\$65.00	\$70.00	\$60.00	3.00	54.00	63.00	72.00	18.00	51.00	75.00
\$840.00	\$870.00	\$840.00	4.00	54.00	63.00	72.00	18.00	51.00	96.00
\$875.00	\$905.00	\$870.00	4.00	54.00	63.00	72.00	18.00	51.00	96.00
\$905.00	\$935.00	\$900.00	4.00	54.00	63.00	72.00	18.00	51.00	96.00
\$1,260.00	\$1,300.00	\$1,285.00	5.00	54.00	63.00	72.00	18.00	51.00	108.00
\$1,340.00	\$1,380.00	\$1,355.00	5.00	54.00	63.00	72.00	18.00	51.00	108.00
\$1,745.00	\$1,790.00	\$1,780.00	6.00	60.00	72.00	81.00	20.00	57.00	123.00
\$1,825.00	\$1,870.00	\$1,850.00	6.00	60.00	72.00	81.00	20.00	57.00	123.00

*Metallic packing on steam piston rods includes this packing on partition plate stuffing box.

Metallic packing is not necessary on steam valve stems; these stuffing boxes being subject to exhaust pressures only.

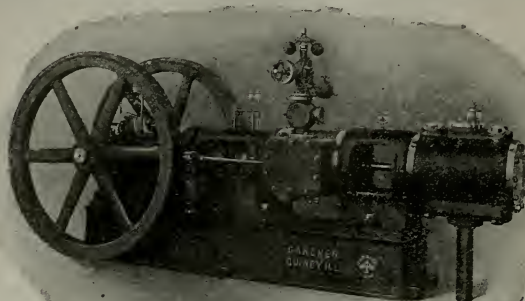
The Cook's and Morris metallic packing is of the split case type.

The Tripp Packing is made with one piece follower rings and requires dismantling compressor for applying or removing.

FOR PIPE, FITTINGS, RECEIVERS AND VALVES, SEE INDEX

GARDNER HORIZONTAL AIR COMPRESSORS

Large bearing surfaces and shafts.
Extra heavy fly wheels.
Automatic Speed and Pressure Regulator and sub-base with oil rim cast all around—
with all steam-driven machines



The 40, 45 and 64 H. P. have band wheels for two belts.
Smaller have fly and hand wheel for one belt

Steam Class B

CLASS A—BELT DRIVEN

AIR CYLINDER		Capacity, Cubic Feet Free Air Per Minute	Maximum Air Pressure	H. P. at Max. Air Pressure	Suction	Discharge	App. Wt. Complete Lbs.	Regular List	List With Tight and Loose Pulleys.
Diameter	Stroke								
6	6	29	100	6	2	2	1350	\$300.00	\$340.00
8	6	52	60	8	2½	2½	1450	340.00	380.00
8	8	69	100	14	2½	2½	1900	450.00	515.00
10	8	108	65	17	3	3	2110	450.00	515.00
10	12	163	100	33	3	3	3250	725.00	.....
12	12	235	70	40	3½	3½	3450	800.00	.....
12	12	235	100	49	3½	3½	5250	800.00	.....
16	12	418	35	45	4½	4	3900	950.00	.....
16	12	418	60	64	4½	4	5400	1050.00	.....

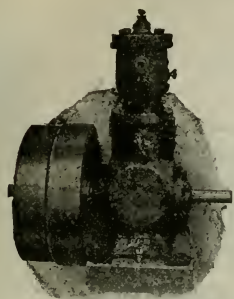
CLASS B—STEAM ACTUATED

SIZE OF CYLINDER			Rev. Per Minute	Capacity, Cubic Ft. Free Air Per Minute	Max. Air Pressure	H. P. at Max. Air Pressure	PIPE OPENINGS				App. Wt. Complete	Regular List
Steam	Air	Stroke					Steam	Exhaust	Air Inlet	Air Outlet		
6	6	6	150	29	100	6	1	1½	2	2	1900	\$500.00
6	8	6	150	52	60	8	1	1½	2½	2½	2000	550.00
8	8	8	150	69	100	14	1½	2	2½	2½	2920	650.00
8	10	8	150	108	65	17	1½	2	3	3	3200	715.00
10	10	12	150	163	100	33	2¼	3	3	3	5100	875.00
12	10	12	150	163	100	33	2½	3½	3	3	5300	1075.00
10	12	12	150	235	70	40	2¼	3	3½	3½	5360	1125.00
12	12	12	150	235	100	49	2½	3½	3½	3½	7720	1400.00
10	16	12	150	418	35	45	2¼	3	4½	4	6500	1300.00
12	16	12	150	418	60	64	2½	3½	4½	4	7200	1575.00

Equipment—With each of the above machines are furnished an unloading device, stationary oiling device, with a liberal quantity of oilers and wipers for all bearings and journals and full set of wrenches. The unloading device consists of an air governor placed in the inlet pipe. When the maximum pressure is attained, the unloader shuts off the air supply and the compressor runs without load, except that power necessary to overcome the friction of the machine. When the receiver pressure falls, the unloader opens, admitting the air and the compressor resumes its work of compression. The pressure in the receiver is thus kept constant, and there is no waste of power. It is entirely automatic in its action.

FOR OTHER TYPES OF AIR COMPRESSORS, SEE INDEX

THE GARDNER-RIX VERTICAL HIGH SPEED COMPRESSOR



No. 1 G R I—Gardner-Rix Single Cylinder Class G Compressor



No. 2 G R I—Gardner-Rix Duplex Class H Compressor with Tank

An original type of high speed vertical air compressor of rather unique design, simple, practical and economical. It is composed of but few parts, has no outside adjustments, is very simple and requires but little attention to keep it in good working condition. The entire freedom from intricate mechanisms requiring delicate adjustments, makes it an especially valuable compressor for uses in places where best care and attention are not always available. You can safely put it into the hands of the most inexperienced without danger of its efficiency becoming impaired through inattention or neglect. It demands but common sense attention that can be given by any one, though he may not have mechanical experience.

SPECIFICATIONS

		Revo- lutions per Minute		Cap'ty Free Air per Minute		H. P. Required at Standard and Maximum Speeds					Openings		Fly Wheel		Floor Space	Shpg. Wt.
Bore and Stroke	Type	Standard Speed	Maximum Speed	Standard Speed	Maximum Speed	Maximum Pressure	40 lbs.	60 lbs.	80 lbs.	100 lbs.	Suction	Discharge	Diameter	Belt	Dimensions Over All	On Skids
3 x 3 1/2	G	375	600	13	8	250	1 1/4-2	1 1/2-2 1/2	1 3/4-2 3/4	2-3	3/4	1 1/2	14	2 1/2	14x17	160
4 1/2 x 4 1/2	G	300	500	5	21	200	2-3 1/2	2 1/4-3 1/4	2 1/2-4	3-5	1 1/4	1	20	4 1/2	20x23	360
6 x 6	G	225	400	22	40	125	3-5 1/2	3 3/4-6 1/2	4 1/2-8	5 1/4-9	2	1 1/2	26	5	26x32	620
8 x 6	G	225	400	40	70	125	5-9	6-11	7 1/2-13 1/2	8 1/2-15	2 1/2	2	30	6	30x38	990
4 1/2 x 4 1/2	H	300	500	25	42	150	4-7	4 1/2-7 1/2	5-8	6-10	1 1/4	1	20	4 1/2	20x31	450
6 x 6	H	225	400	45	80	125	6-11	7 1/2-13	9-16	10 1/2-18	2	1 1/2	26	5	26x31	860
8 x 6	H	225	400	80	140	125	9-18	11-22	14-27	16-30	2 1/2	2	30	6	30x25	1380

PRICE LIST

Bore and Stroke	Type	List Price	Extra for Unloader	Extra for Sub-Base	Extra for Loose Pulley	Extra for Clr. Pump Attach.
3 x 3 1/2	G	\$ 87.00	\$17.50	\$ 3.50	\$12.00	\$19.00
4 1/2 x 4 1/2	G	144.00	19.00	5.50	21.00	21.00
6 x 6	G	250.00	31.50	10.50	30.00	24.00
8 x 6	G	350.00	35.00	18.00	44.00	24.00
4 1/2 x 4 1/2	H	270.00	19.00	9.00	21.00	21.00
6 x 6	H	410.00	44.00	16.00	35.00	24.00
8 x 6	H	610.00	49.00	21.00	52.00	24.00

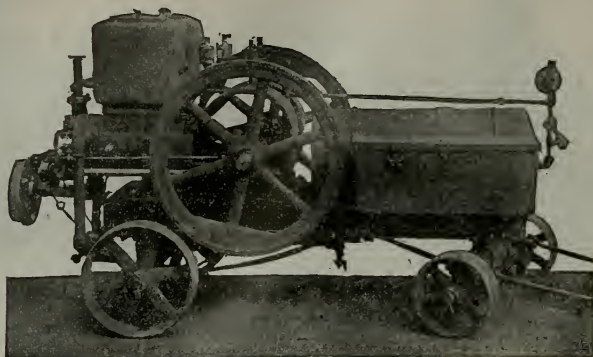
Regular Compressor is furnished with tight pulley of the size indicated in the table above, and with the necessary wrenches. The unloader is not part of the regular equipment, and should be specified if desired. It is necessary where a constant pressure is required.

Loose Pulley can be furnished if desired. It makes a convenient arrangement for starting and stopping compressor where driven from shafting continually in motion.

Class "G" designates the single cylinder compressor suited for pressures as indicated in the above table.

Class "H" designates the double cylinder or duplex compressor for pressures as above.

PORTABLE AIR COMPRESSORS



The No. 1 Portable Compressor Outfit is the result of many years of experiment and designing on the part of the manufacturers. It is a light, well-built, evenly balanced compressor that can be used to operate all of the smaller-sized tools for carving and lettering stone, drilling steel and iron, paint spraying, etc.

The engine and compressor cylinders are mounted on one common frame. The pistons are actuated by an evenly balanced opposed double throw crank. This means an even balance and perfectly smooth operation, with scarcely any vibration. This gives long life to the machinery and prevents the pipe connections from becoming loose and leaky.

By this construction all the power is transferred directly from the engine to the compressor. There are no belts, chains, gears or couplings.

The engine has variable speed control and being of the four-cycle heavy duty type with hit and miss governor, is very economical. In fact this outfit will run an ordinary tool all day on one gallon of fuel.

The compressor is of the disc valve type and entirely automatic in its regulation. It is water-cooled, the same as the engine.

The low construction, steel truck and broad wheels make the entire machine very easy to move about. The tank and all fittings are protected and are so neatly connected that every possible chance for parts becoming loose or worn has been removed. All machines are fully guaranteed.

SPECIFICATIONS

Engine—4 cycle, horizontal, water cooled, 4-inch bore, 4-inch stroke, $2\frac{1}{2}$ H. P.

Compressor—single acting, water cooled $3\frac{1}{2}$ -inch bore, 4-inch stroke, 14 cu. ft. of air.

Capacity—1, 2 or 3 tools.

Cost to run— $1\frac{1}{2}$ c per hour per tool.

Weight—750 lbs.

Automatic Air Regulation.

Speed—250-650 rev. per minute.

Mounted on all-metal truck.

Fuel—Gas or gasoline preferred.

Length—5 feet.

Width—2 feet 6 inches.

Height—2 feet 6 inches.

Air tank—12 inches by 30.

Pressure—from 30-100 lbs.

Guaranteed for 1 year.

Fully equipped, with drip cocks, safety valve and pressure gauge.

List Price\$250.00

Prices of Larger Sizes on Application



Fig. 611A

AIR RECEIVERS

An air receiver is an important part of a compressed air equipment. The sizes below are recommended for use in connection with compressors. Nos. 00 and 0 are seamless tanks, tinned inside and outside and guaranteed strong enough to withstand pressure of 200 lbs. per square inch. Other sizes are made of the best 60,000 t. s. steel. They are tested to 165 lbs. water pressure and guaranteed safe and tight under 110 working air pressure. With each tank are included the following: Safety valve, pressure gauge and drain cock.

No. of Size	00	0	1	2	3	4	5	6
Diameter in inches	12	18	18	24	30	36	36	42
Height, feet	3	3 1/2	6	6	6	6	8	8
Thickness of Shell			11/16	3/8	1/4	1/4	1/4	1/4
Thickness of Heads			3/4	3/4	5/8	3/8	3/8	3/8
Diameter of Flanges			2 1/2	2 1/2	2 1/2	3	3 1/2	5
Diameter of Safety Valve	1/2	3/4	1	1 1/4	1 1/2	1 1/2	1 1/2	2
Cap. cu. ft. Compressor	8 1/2	21	90	120	150	200	300	500
Approximate weight	70	170	300	400	1100	1300	1700	2000
List each	20.00	44.00	64.00	88.00	112.00	144.00	178.00	210.00

Larger Sizes and for Heavier Pressures on Application

BINKS CLEANALL AIR GUN

FOR COMPRESSED AIR

This device is used in foundries, machine shops, mills, garages, etc., wherever compressed air is used. The air is under constant control of the operator at all times and the desired volume can be obtained by simply pressing button. It is absolutely tight and there is no leakage of air when not in use. Indispensable for blowing dust from motors, machinery, automobile cushions, etc. Used to equal advantage by bench and machine hands for removing chips and filings where it is impossible to reach with a brush. For cleaning molds in foundries it is decidedly more convenient and practical than the hand bellows.



PRICE LIST

Pipe Connection inch	Orifice Air Discharge inch	List Price	Pipe Connection inch	Orifice Air Discharge inch	List Price
1/8	1/8	\$1.50	1/8	3/8	\$2.50
1/4	1/4	1.65	3/4	3/8	3.25
3/8	1/4	1.90	....	....	....

FOR SAND BLAST HOSE, SEE INDEX

UNDERGROUND GASOLINE STORAGE OUTFIT

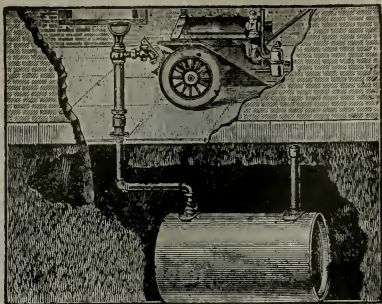


Fig. 711A

Listed and approved by the National Board of Fire Underwriters.

Constructed of the very best material obtainable for the purpose intended. All seams are butted and welded by the Oxy-Acetylene process, which makes them 50 per cent stronger than the riveted tank. Dropping and rough handling in transit frequently springs riveted tanks, which causes them to leak.

These tanks are 80 per cent stronger than a soldered tank.

All tanks are thoroughly galvanized inside and out, and painted with rust-proof paint. The tanks have one 2 inch flange opening, one $\frac{3}{4}$ inch flange opening, and one 1 inch opening. The 2 inch opening is for the filler pipe, the $\frac{3}{4}$ inch is for the suction pipe, and the 1 inch opening is for vent when needed.

Pumps for private garage use embody many good points in design, which are featured in expensive high-grade pumps.

They are built of rust-proof materials throughout. There are no intricate parts to get out of order and no fine adjustments to bother with. All valves are of heavy brass and the cylinder is a seamless brass tube.

COMPLETE OUTFIT CONSISTS OF

Heavy galvanized iron tank.

Pump.

Filler pipe, 2 inches in diameter by 24 inches long.

Suction pipe, which is 10 feet $\frac{3}{4}$ inch galvanized pipe.

Connections for suction pipe, 1- $\frac{1}{2}$ inch elbow, 1- $\frac{1}{2}$ inch street elbow and one pipe $\frac{3}{4}$ inch pipe 30 inches long.

The following sizes and gauges kept in stock, which can be furnished with Model H Pumps:

60 gallon, 18 gauge steel.....	\$34.00	110 gallon, 18 gauge steel.....	\$40.00
60 gallon, 16 gauge steel.....	36.00	110 gallon, 16 gauge steel.....	43.80
60 gallon, 14 gauge steel.....	46.00		

Prices on other sizes furnished promptly upon request.

All outfits comply with National Board of Fire Underwriters' Rulings.

INSTRUCTIONS FOR INSTALLATION

Tank must be buried 2 $\frac{1}{2}$ feet under the surface. $\frac{3}{4}$ inch pipe is used for connecting tank and pump; 1-inch pipe is used for vent when vent is required. Tank equipped with extra flange for vent on request. Filler pipe made of 2 inch pipe with heavy cap with locking device and fine mesh strainer. When installing, there should be a drop of 1 inch to 10 feet on the connecting pipe; fall being from pump to tank. All joints should be made up with a mixture of litharge and glycerine.

MODEL "H" LEVER HANDLED GASOLINE PUMP

This Pump has been examined, tested by the National Board of Fire Underwriters for the U. S. and listed among the permitted systems. This means no trouble from an insurance standpoint.

This pump is made of rust-proof material throughout. Like our Model S Pump, there are no intricate parts or adjustments to get out of order. All valves are made of very heavy brass and the cylinder of the pump is made of seamless brass tubing.

It will pump approximately one quart to a stroke, although it is not a measuring pump. Especially adapted for use in private garages or small public garages.

List price, each.....\$24.00



Fig. 711B. Model H

GARAGE SOAP ECONOMIZER



Fig. 87

Reduces soap consumption ONE-HALF, saves all waste and prevents THEFT.

It works on the same principle that the common soap shaker does in washing dishes.

Simply fill the perforated pail with four to six pounds of soap, and suspend, by cord, chain or other method, in hot water washing tank or barrel.

Very little agitation is required, as the numerous perforations allow perfect circulation of water.

Made of heavy galvanized perforated steel.
No. 30. Capacity, 6 $\frac{1}{2}$ lbs.; diameter, 6 $\frac{1}{4}$ inches; height, 8 inches...each \$1.75

SAFETY RUBBISH BARREL

BUILT TO BANG ABOUT
A Necessary Adjunct to
Every Well-Equipped
Garage

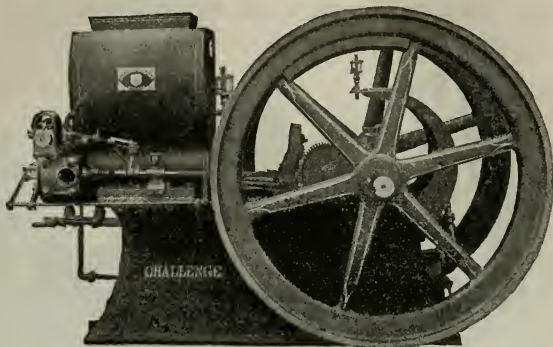
Extra Heavy Steel Guards
Heavy V Guards

No.	Hgt. in.	Dia. in.	Wt. lbs.	Price each
1	26	20	44 $\frac{1}{2}$	\$7.00
2	26	18	42	6.00
3	26	17 $\frac{1}{2}$	37	5.75



Fig. 65

CHALLENGE GASOLINE AND KEROSENE ENGINES



Challenge Engines have been on the market for the past twenty years and have built up a world wide reputation for satisfactory service, strength and durability that makes them easy to sell, and when sold, stay sold. They are made in sizes from 1 to 16 H. P., Stationary or Portable for operating on Gasoline or Kerosene and can be furnished with built in magnetos, which eliminate all batteries, make starting easy and after started run perfectly with little or no attention.

The design of the Challenge is very compact and simple, it having only as many working parts as are absolutely necessary to make a perfect working machine and made strong and durable to prevent breakages.

The factory where Challenge Engines are made is equipped with up-to-date machinery and all parts of the engine are made on templates, therefore, are interchangeable, and no trouble will be experienced in getting repairs at any time in the future should they be necessary.

On the smaller sized engines, 1 to 6 H. P., the base is in two parts, which permits the engines being used either as a portable or stationary. These engines may be set on a concrete foundation and if at any time it is desired to mount it portable, it can be removed from the sub-base without disturbing the connections to foundation. The fuel tank is located in base which makes the outfit very compact.

In the 8, 10, 12 and 16 H. P. sizes, the engines are fitted with a circulating pump. It is of the same design as the open water jacket engines, with the exception of the cylinder. This cylinder is provided with a large water jacket through which the water is forced by means of a rotary pump, operated by a belt from the main shaft. This furnishes a constant flow entirely surrounding the cylinder and makes a perfect cooling system for any size engine.

The pump is constructed without valves or checks. There is nothing about it to wear out and it is always ready for action. The level of the water in the reservoir is lower than the cylinder, consequently when the engine stops running the cylinder is entirely emptied. This method of cooling affords absolute protection against freezing and bursting the water jacket. All water may be drained off by turning a stop cock under the pump.

EQUIPMENT

On all engines from 1 to 6 H. P., each engine is sent out with a complete equipment consisting of a battery and coil, starting crank, two wrenches and oil can. Upon its arrival all you have to do is to fill fuel and water tank and oil cups and the engine is ready to start.

On engines of 8, 10, 12 and 16 H. P., each engine is sent out with a good reliable Oscillating magneto attached, two wrenches and oil can. All you have to do is to fill the fuel and water tanks and oil cups and it is ready to run.

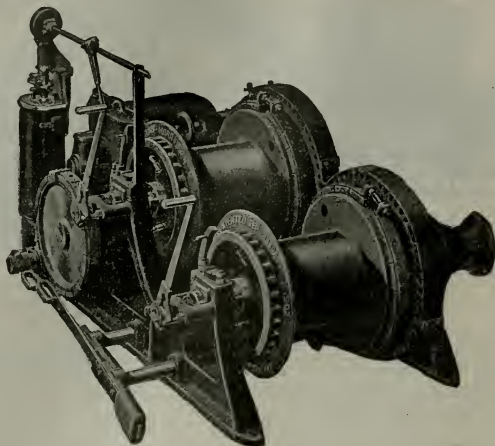
Size	Weight, lbs.	Price with Battery	Price with Magneto	Extra for Kerosene Attachment
1 H. P., Stationary	200	\$50.00	\$62.00	.....
1 H. P., Hand Portable	240	57.00	70.00	.....
2 H. P., Stationary	350	70.00	83.00	.....
2 H. P., Hand Portable	400	78.00	91.00	.....
3 H. P., Stationary	400	90.00	108.00	\$10.00
3 H. P., Hand Portable	500	98.00	116.00	10.00
5 H. P., Stationary	860	160.00	178.00	10.00
5 H. P., Hand Portable	970	176.00	194.00	10.00
5 H. P., Horse Portable	1,400	260.00	378.00	10.00
6 H. P., Stationary	1,150	200.00	218.00	10.00
6 H. P., Hand Portable	1,320	216.00	234.00	10.00
6 H. P., Horse Portable	1,600	300.00	318.00	10.00
8 H. P., Stationary	2,200	.....	360.00	20.00
8 H. P., Horse Portable	2,300	.....	470.00	20.00
10 H. P., Stationary	3,200	.....	600.00	20.00
10 H. P., Horse Portable	3,500	.....	580.00	20.00
12 H. P., Stationary	3,400	.....	710.00	20.00
12 H. P., Horse Portable	3,700	.....	790.00	20.00
16 H. P., Stationary	4,400	.....	960.00	20.00
16 H. P., Horse Portable	4,700	.....	.....	.....

All Horse Portable engines are provided with friction Clutch Pulley.

We can furnish larger engines, either gasoline or kerosene. Prices on application.

DOUBLE FRICTION DRUM ELECTRIC HOIST

"STANDARD" DOUBLE FRICTION DRUM ELECTRIC HOIST



The construction of our Double Drum Electric Hoists is such that their operation is like that of a regular Double Drum Hoisting Engine and therefore familiar to any hoisting engineer. They are self-contained and furnished complete as shown, ready for attachment of feed wires.

The Patent Controller Operating Mechanism, furnished with hoists having two or more drums, facilitates the operation of the controller and prevents injury through careless handling, saving time and annoyance, and reducing the cost of maintenance. The operating hand lever is clamped about a horizontal shaft, like the throttle lever of a hoisting engine, and arranged to rotate the controller cylinder by means of a pair of inclosed bevel gears and a flexible connection permitting a step-by-step movement which prevents burning of the contact fingers.

In an Electric Hoist the Motor offers practically no resistance to backing down of the load after the current is shut off. For preventing such backing down of the load and thus to secure the same ease and safety of operation as is afforded by a steam hoist, we furnish the intermediate shaft of our electric hoists having two or more drums, with a Patent Automatic Brake.

This Automatic Brake consists simply of a wood-lined band encircling a brake wheel keyed to one of the shafts of the hoisting machine. The band is fitted with a right and left adjusting nut, and has its ends pivoted to a brake rocker loosely mounted on a pin projecting from the frame of the machine. The ends of the band are pivoted to the rocker at unequal distances from the center of the pin, and thus produce a differential action whereby forward rotation of the brake wheel acts to turn the rocker in the direction to lengthen the band and release the brake, while backward rotation acts to turn the rocker in the direction to shorten the band and cause it to grip the brake wheel and apply the brake.

The brake is reliable and effective, offers very slight resistance to forward rotation, and automatically and positively prevents backward turning.

No.	Horse Power	Hoisting Capacity		Drum		Diameter Flanges inches	Approximate Shipping Weight	List Price Complete
		On Single Rope lbs.	Speed, ft. per Minute	Diameter inches	Length inches			
101	10	1,800	150	12	14	21	3,500	\$1,600.00
102	25	4,000	170	14	18	25	6,700	2,304.00
103	50	7,000	190	14	21	28	10,000	3,030.00
104	75	10,000	220	16	24	35	13,000	4,040.00

We can furnish any style or horse power electric hoists, and will be glad to quote prices on receipt of specifications.

DOUBLE-CYLINDER, DOUBLE-FRICTION DRUM HOISTING ENGINE WITH BOILER

We can also furnish this Hoist in single and three drum type, also with slewing attachments, or any of the Hoists listed below without boilers.

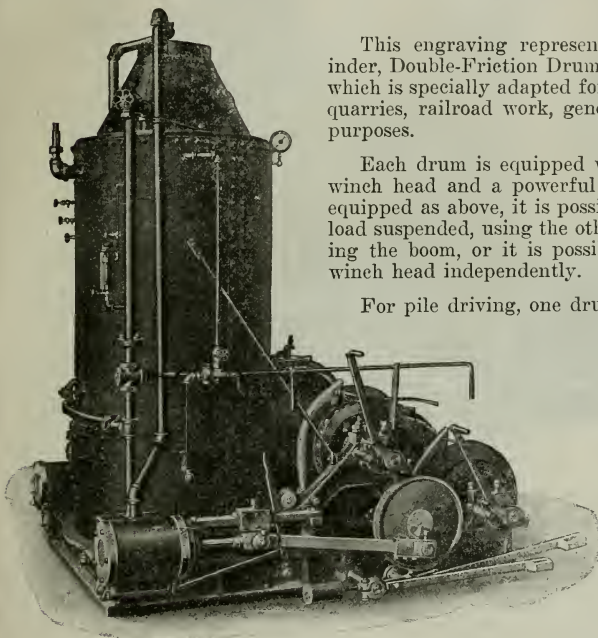


Fig. 115

This engraving represents our Improved Double-Cylinder, Double-Friction Drum Hoisting Engine, with Boiler, which is specially adapted for bridge building, pile driving, quarries, railroad work, general derrick work and hoisting purposes.

Each drum is equipped with ratchet and pawl, turned winch head and a powerful foot brake. With the drums equipped as above, it is possible to hold one drum with the load suspended, using the other drum for hoisting or lowering the boom, or it is possible to operate either drum or winch head independently.

For pile driving, one drum is used for placing the pile and the other for operating the hammer.

The crossheads are of the hanging locomotive type, with extra large wearing surfaces, and are fitted with bronze gibs.

Some features of this Hoist are, drums bushed with bronze bushings, double V friction, cut gears, steel pinion, and Boiler constructed for 125 pounds working pressure.

SPECIFICATIONS

Description	Engine Size	
	No. 670 $\frac{1}{4}$	No. 671
Horse Power	16	25
Size of Cylinder, inches.....	6 $\frac{1}{4}$ x9	7 $\frac{1}{2}$ x10
Diameter of Drum, inches.....	14	14
Diameter of Flange, inches.....	24	26
Length of Drum between Flange, inches.....	25	31
Size of Boiler, inches.....	36x84	42x90
Number of 2 inch Tubes.....	72	92
Floor Space required, inches	85x90	87x103
Weight Hoisted, Single Rope, Usual Speed, lbs.....	4,000	6,500
Suitable Weight for Pile Driving Hammer, lbs.....	2,000	4,000
Approximate Shipping Weight, lbs.....	8,300	11,300
List Price.....	\$1,500.00	\$1,755.00

DOUBLE-CYLINDER, FRICTION-DRUM HOISTING ENGINE, WITHOUT BOILER

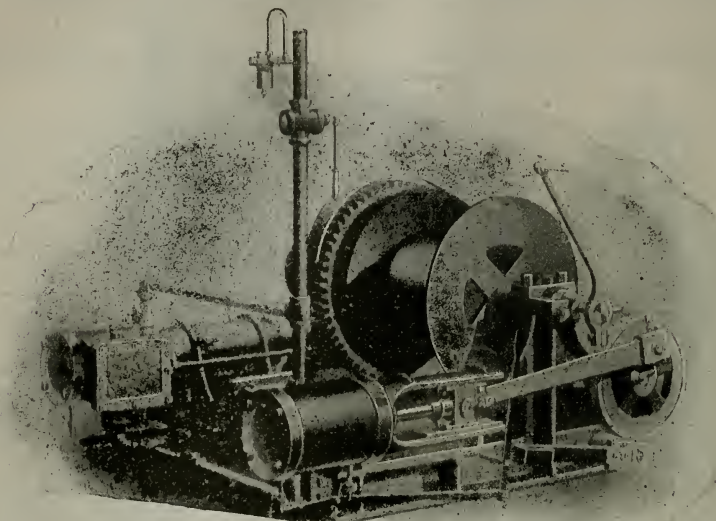


Fig. 118

The above engraving shows our Double Cylinder, Single Friction Drum Hoisting Engine, without Boiler, and with a turned winch head attached to the end of the drum shaft.

The frames of this Engine are made in sections, securely bolted together, and all parts well secured by dowel pins. This feature permits sectionalizing for mountain transportation or placing in mines. The drum is equipped with a powerful foot brake and bronze bushings. The friction is the double V type. The gear and pinion are cut, and the pinion is steel. The Engine will operate successfully on air or steam.

This Engine is especially adapted for general hoisting purposes and is being used extensively by contractors where but one drum is required and the air or steam is supplied from a central plant.

Being very compact, it occupies little space, which makes it very desirable for use on board ship or for mounting on dock wheels. When mounted it is easily moved from place to place for the convenient handling of the cargo.

We can also furnish this Hoist with Reversible Link Motion Attachments

DESCRIPTION

	Engine Size					
	No. 32	No. 33 ½	No. 34	No. 35	No. 36	No. 37
Horse-power	8	10	15	25	35	45
Size of Cylinder, inches.....	4x6	5x7	6 ¼x8	7x10	8 ½x10	9x12
Diameter and Length of Drum, inches.....	10x12	12x14	14x16	14x20	16x26	16x26
Floor-space Required, inches	33 ½x41	35x48	42x53	51x64	67x72 ½	67x81 ½
Wt. Hoisted, Single Rope, Usual Speed, lbs..	1,000	2,000	3,000	5,000	8,000	11,000
Approximate Shipping Weight, pounds.....	1,400	2,000	2,700	4,200	6,200	7,700
List	\$480.00	\$570.00	660.00	\$780.00	\$900.00	\$1200.00

DOUBLE-CYLINDER, REVERSIBLE CONTRACTOR'S HOISTING ENGINE

Designed especially for the building contractor, and is used for running either single or double material elevators, or for running a pump or circular saw. It successfully fills the many and various requirements encountered in the erection of buildings.

Having Double Cylinders and Cranks set at an angle of 90 degrees, there is no sticking on centers, and it is always ready to start with a strong pull.

The Elevator Sheave is operated by a clutch on the drum shaft. When the sheave is thrown out it becomes independent, and the friction drum is then free for hoisting purposes. The sheave is equipped with a brake, making possible the stopping and holding the elevator at any particular point.

All Working Levers are within easy reach of the operator.

Fig. 112

A 30 inch Belt Pulley or Winch Head can be furnished in place of the sheave.

The Hoisting Drum is bushed with bronze bushings and has double V friction. The Pinion is steel, and the Gear and Pinion are cut.

We Can Also Furnish This Hoist with Double-Drum in 10, 15 and 25 H. P.

SPECIFICATIONS

	Engine Size No. 5
Horse Power	10
Size of Cylinder, inches.....	5x7
Diameter of Drum, inches.....	8
Diameter of Flanges, inches.....	22
Length of Drum between Flanges, inches.....	18
Diameter of Sheave, inches.....	30
Size of Boiler, inches.....	30x72
Number of 2 inch Tubes.....	55
Floor Space required, inches.....	43x58
Weight Hoisted, Single Rope, Usual Speed, lbs.....	2,000
Weight Hoisted on Sheave Wheel, Single Rope, Usual Speed, lbs.....	800
Approximate Shipping Weight, lbs.....	4,900
List price.....	\$1,050.00

VERTICAL ENGINES

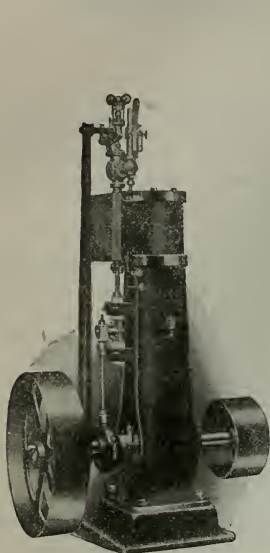


Fig. S61. Class F

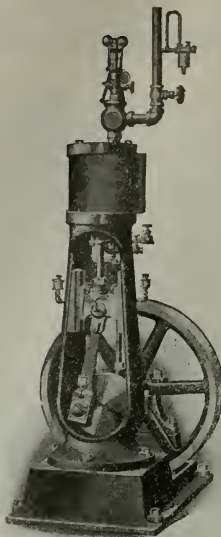


Fig. S62. Class B

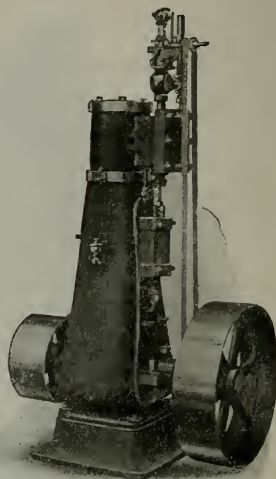


Fig. S63. Class D

CLASS "F" VERTICAL ENGINE

The Class "F" Vertical Engine is well made throughout, the rods being of steel, the crank shaft of solid forged steel, and the brasses of phosphor-bronze. It is very popular with the manufacturers of cement and concrete mixers, the majority of the mixers in the country being equipped with this Engine.

A critical steam test of every Engine is made before it leaves our factory, and the necessary adjustments carefully made, so that the Engine is ready to run the moment it is placed in position and given steam.

The fittings and fixtures comprise: Fly Wheel, Pulley, Oil Cups, Sight Feed Lubricator, Throttle Valve and Nipples, Governor and Governor Belt. Foundation Bolts and Washers will be furnished, when ordered, at an extra cost. See index.

SPECIFICATIONS

Horse-power	1	1½	2	3	4	5	6	7
Size of Cylinder, inches.....	2½x3	3x3	3x5	4x4	4x5	5x5	5x7½	6x6
Revolutions per Minute.....	400	400	350	325	325	300	250	225
Diameter of Steam Pipe, inches.....	¾	¾	¾	¾	¾	¾	1	1
Diameter of Exhaust Pipe, inches.....	½	¾	¾	1	1	1	1½	1½
Diameter of Shaft, inches.....	1½	1½	1½	1½	1½	1½	2	2
Diameter and Face of Wheel, inches....	12x3	12x3	15x4	16x4	17x4½	20x5	24x6	24x6
Diameter and Face of Pulley, inches....	6x3	6x3	10x5	10x5	12x6	12x6	14x6	14x6
Height from Floor to Center of Shaft, in.	7	9	10	9½	10	10	13	14
Height from Floor to Top of Cylinder, in.	28	31	43	36½	43	43	54	54
Floor-space Occupied, inches square....	13	13	17	13½	17	17	20	20
Approximate Weight, lbs.....	200	200	375	400	425	500	750	825
Price of Engine complete.....	\$75.00	\$87.00	\$105.00	\$111.00	\$115.00	\$121.00	\$145.00	\$152.00
Horse-power	8	9	10	12	15	20	25	
Size of Cylinder, inches.....	6x7½	6½x7½	7x7	7x8½	8x8½	9x9	10x10	
Revolutions per Minute.....	225	225	200	200	200	160	160	
Diameter of Steam Pipe, inches.....	1½	1½	1½	1½	1½	2	2½	
Diameter of Exhaust Pipe, inches.....	1½	1½	1½	1½	2	2½	3	
Diameter of Shaft, inches.....	2½	2½	2½	2½	2½	3	3½	
Diameter and Face of Wheel, inches....	24x6	28x7	30x6¾	30x6¾	36x7½	40x9	44x10½	
Diameter and Face of Pulley, inches....	14x6½	14x6½	16x7½	16x7½	18x8	20x10	24x12	
Height from Floor to Center of Shaft, inches.	13	14½	17½	17½	19½	23½	26½	
Height from Floor to Top of Cylinder, inches.	54	55½	63	67	69	79	86	
Floor-space Occupied, inches square....	20	20	24	24	24	30	36	
Approximate Weight, lbs.....	850	925	1,250	1,450	1,500	2,225	3,050	
Price of Engine complete.....	\$160.00	\$169.00	\$202.00	\$231.00	\$242.00	\$360.00	\$540.00	

See next page for description and specifications on Class B and D Engines.

VERTICAL ENGINES—Continued

CLASS "B" VERTICAL ENGINE

Our Disc Crank Vertical Engine, is desirable for general purposes where small powers are required. They are very strong, heavy in construction and well proportioned, and will stand continuous hard service. A critical steam test of every Engine is made before it leaves the factory, and the necessary adjustments carefully made, so that the Engine is ready to run the moment it is placed in position and given steam.

The fittings are: Oil Cups, Sight-feed Lubricator, Throttle Valve and Nipples, Governor and Governor Belt. Foundation Bolts and Washers will be furnished, when ordered, at an extra cost. See index.

Above 20 horse power, these Engines are equipped with Center Oiler for the Crank Pin.

SPECIFICATIONS

Horse Power	1½	3	5	7	10	14
Size of Cylinder, in.	3x3	4x4	5x5	6x6	7x7	8x8
Revolutions per minute	400	325	250	225	200	180
Size of Steam Pipe, in.	½	¾	¾	1	1¼	1½
Diameter of Exhaust Pipe, in.	¾	1	1	1¼	1½	2
Diameter of Shaft, in.	1⅞	1⅞	1½	1½	2	2½
Diameter of Fly Wheel, in.	12	16	20	24	32	36
Face of Fly Wheel, in.	3	4	5	6	7	8
Height from floor to center of Shaft, in.	9	10	12	14	18	20
Height to top of Cylinder, in.	30	36	43	53	61	68
Floor space occupied, in.	13x23	15x28	18x36	22x40	25x46	28x50
Weight of Engine, lbs.	250	375	650	950	1,550	2,000
Price of Engine complete	\$87.00	122.00	155.00	190.00	272.00	336.00

Horse Power	20	25	35	50	75
Size of Cylinder, in.	9x9	10x10	12x12	14x14	16x16
Revolutions per minute	160	160	160	150	140
Size of Steam Pipe, in.	2	2½	3	3½	4
Diameter of Exhaust, in.	2½	3	3½	4	4½
Diameter of Shaft, in.	2½	3¼	3¾	4¾	5¾
Diameter of Fly Wheel, in.	42	44	48	52	54
Face of Fly Wheel, in.	9	10	12	14	16
Height from floor to center of Shaft, in.	24	26	28	30	31½
Height to top of Cylinder, in.	79	86	94	105	113
Floor space occupied, in.	31½x58	36½x62½	40x70	41x80	41x85
Weight of Engine, lbs.	2,650	3,700	4,800	7,700	11,000
Price of Engine complete	\$382.00	570.00	750.00	1,010.00	1,400.00

CLASS "D" VERTICAL ENGINE

The Class "D" Vertical Engine is our center crank, inclosed type. All working parts being inclosed by means of dust proof plates, makes the Engine very desirable for operating cement mixing machinery, and in all places where a dust proof Engine is preferable.

The covering plates are so attached that they may easily be removed for inspection or adjustment of the Engine.

We call attention to the following features: Crank Shaft of solid forged steel; Eccentric keyed to crank shaft; extra long Journals set low to prevent vibrations.

A critical steam test of every Engine is made before it leaves the works, and the necessary adjustments carefully made, so that the Engine is ready to run as soon as placed in position and given steam.

The fittings and fixtures comprise: Fly Wheel, Pulley, Oil Cups, Sight Feed Lubricator Throttle Valve and Nipples, Governor and Governor Belt. Foundation Bolts and Washers will be furnished, when ordered, at an extra cost. See index.

SPECIFICATIONS

Horse Power	6	7	8	9
Size of Cylinder, in.	5x7½	6x6	6x7½	6½x7½
Revolutions per minute	250	225	225	225
Diameter of Steam Pipe, in.	1	1	1¼	1¼
Diameter of Exhaust Pipe, in.	1¼	1¼	1½	1½
Diameter of Shaft, in.	2¾	2¾	2¾	2¾
Diameter and Face of Wheel, in.	24x6	24x6	24x6	28x7
Diameter and Face of Pulley, in.	14x6 ⅝	14x6 ⅝	14x6 ⅝	14x6 ⅝
Height from floor to center of Shaft, in.	13	14	13	14½
Height from floor to top of Cylinder, in.	54	54	54	55½
Floor space occupied, in. square	20	20	20	20
Approximate weight, lbs.	875	900	925	1,025
Price of Engine complete	\$169.00	176.00	184.00	193.00

HORIZONTAL ENGINES

These Engines are of the self-contained center-crank type, and are well made throughout. The Crank Shaft is cut from a solid forging of the best quality of steel, and is equipped with cast-iron counterbalancing discs, securely fastened. The Piston is provided with self-adjusting packing rings. The Connecting Rod is equipped with phosphor-bronze boxes at each end. The cross-head end is the solid-end type, while the crank-pin end is of the strap type. Both brasses are adjusted by means of adjusting wedges. All parts are of easy access in case of adjustment or repairs.

The Fly Wheel and Pulley are turned crown-face, making it possible to belt from either.

A critical steam test of each Engine is made before it leaves the factory, and the necessary adjustments carefully made, so that the Engine is ready to run the moment it is placed in position and given steam.

The fittings and fixtures comprise: Fly Wheel, Pulley, Sub-base, Oil Cups, Sight Feed Lubricator, Throttle Valve and Nipples and Governor Belt. Foundation Bolts and Washers will be furnished when ordered, at extra cost. See Index.

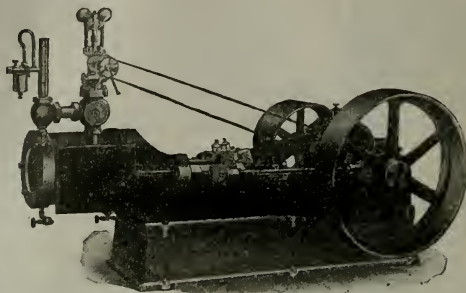


Fig. 851. Class "F"

SPECIFICATIONS

Horse-power	6	8	9	10	12	15	20	25
Size of Cylinder, inches	5x7½	6x7½	6½x7½	7x10	7½x10	8x10	9x12	10x12
Diameter of Steam Pipe, inches	1	1¼	1¼	1½	1½	1½	2	2¼
Diameter of Exhaust Pipe, inches	1¼	1½	1½	2	2	2	2½	3
Diameter of Shaft, inches	2½	2½	2½	2½	2½	2½	3¼	3¼
Diameter and Face of Wheel, inches	24x6	24x6	28x7	30x6¾	30x6¾	36x7¼	44x10	44x10
Diameter and Face of Pulley, inches	14x6	14x6	14x6	18x7½	18x7½	18x7½	20x10	24x12
Revolutions per Minute	250	225	225	200	180	180	160	160
Floor-space required for Base, inches	19½x50	19½x50	19½x50	21x59½	21x59½	21x59½	28x65	28x65
Approximate Shipping Weight, lbs.	1,000	1,075	1,150	1,650	1,700	1,750	2,650	2,750
Price of Engine complete	\$155.00	\$170.00	\$180.00	\$220.00	\$242.00	\$255.00	\$375.00	\$392.00

CLASS "B" HORIZONTAL ENGINE

The Class "B" Horizontal Engine is the Self-contained, Disc-crank type. Being complete on a single cast-iron base prevents any of its working parts from becoming out of line. This Engine is strong and heavy, with the metal properly distributed.

The Piston is provided with self-adjusting packing rings. All Rods are of steel, all wearing surfaces are large, and suitable means have been provided for easy adjustment.

The 25 and 35 horse-powers are equipped with balance Valve and Center Oilier.

A critical steam test is made of every Engine before it leaves the factory, and the necessary adjustments carefully made so that the Engine is ready to run the moment it is placed in position and given steam.

The fittings are Oil Cups, Sight-feed Lubricator, Throttle Valve and Nipples, Governor and Governor Belt. Foundation Bolts and Washers will be furnished, when ordered, at an extra cost. See Index.

We recommend this Engine for heavy and continuous service.

The Fly Wheel is turned crown face, making it suitable for belt. There is sufficient shaft extension beyond the out-board bearing for attaching a Pulley, if desired.

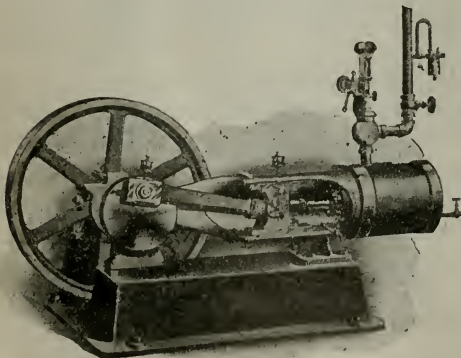


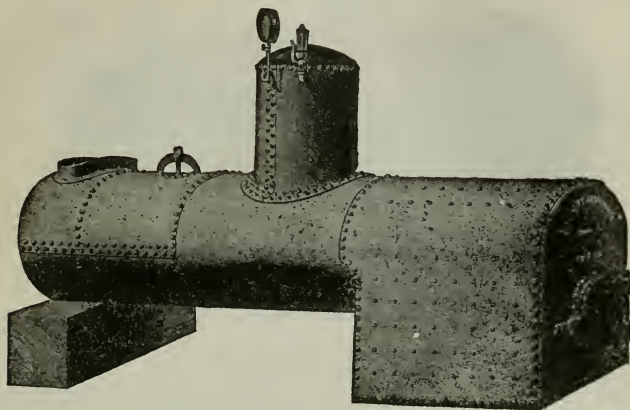
Fig. 852. Class "B"

SPECIFICATIONS

Horse-power	5	7	10	14	20	25	35
Size of Cylinder, inches	5x5	6x6	7x7	8x8	9x9	10x12	11x13
Revolutions per Minute	250	200	190	180	160	160	160
Size of Steam Pipe, inches	¾	1	1¼	1½	2	2½	2½
Diameter of Exhaust Pipe, inches	1	1¼	1½	2	2½	3	3
Diameter of Shaft, inches	1½	1½	2½	2½	2½	3	3
Diameter of Fly Wheel, inches	20	24	32	36	42	48	48
Face of Fly Wheel, inches	5	6	7	8	9	10	11
Floor Space Required, inches	29x34	31x38	41x46	46x52	48x57	50x72	50x72
Weight of Engine, lbs.	925	1,000	1,650	2,100	2,700	4,500	4,700
Price of Engine complete	\$163.00	\$202.00	\$272.00	\$351.00	\$387.00	\$568.00	\$638.00

OPEN BOTTOM PORTABLE BOILER

CLASS "B"



This Boiler is made of homogeneous Flange steel plate of 60,000 pounds tensile strength, and under the same careful supervision as all boilers on our list. The Furnace has a three inch water space on all sides of the fire and is adapted for burning wood or coal. The Door Mouth is formed by flanging the inside plate outward to meet the flange of the outside plate, the two flanges are riveted together and caulked. This construction removes the rivets and caulked edge from direct contact with the fire, and avoids the trouble experienced where the door opening is surrounded by a solid or box ring with rivet-heads projecting into the furnace.

The longitudinal seam in the shell of the boiler is double riveted, the furnace is supplied with a fusible plug in the crown sheet, and the boiler is thoroughly well made throughout.

SPECIFICATIONS

Number of Size.....	4	5	6	7	8	9	10	11	12	13	14	15	16
Horse Power, as usually rated.....	25	30	35	40	50	60	70	80	90	100	110	125	150
Diameter of Boiler.....in.	40	42	44	44	48	54	56	58	58	62	64	66	66
Length of Furnace, inside, approximate.....	48	50	50	50	54	60	60	60	60	60	60	60	72
Width of Furnace, inside, approximate.....	34	36	38	38	42	48	50	52	52	58	58	60	60
Height of Furnace above Gates, approximate.....in.	33	34	36	36	40	44	44	48	48	50	52	54	54
Number of Tubes (3-in. diameter).....	34	40	44	44	54	60	60	66	76	90	100	108	108
Length of Tubes used.....ft.	8	8	8½	10	10½	11	12	12	14	14	14	15	17½
Thickness of Shell and outside of Fire-box.....in.	9-32	9-32	9-32	9-32	5-16	5-16	11-32	11-32	11-32	¾	¾	¾	¾
Thickness of Furnace Plate.....	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16
Thickness of Tube Sheets.....	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Diameter of Dome.....	22	22	26	26	26	30	30	32	32	32	36	36	36
Height of Dome.....	24	24	28	28	28	34	34	36	36	36	40	40	40
Diameter of Stack.....	18	20	20	20	22	24	26	26	26	30	30	32	32
Length of Stack.....ft.	24	24	20	20	26	26	40	40	50	50	50	50	60
List Price, complete.....	\$1951	2084	2262	2456	2798	3356	3660	3833	4058	4453	4718	4988	5378
Weight of Boiler.....about	5,600	6,000	6,400	7,300	8,900	10,800	11,900	12,900	14,000	15,700	16,600	18,600	20,600
Weight of Boiler Fixtures.....	900	950	1,050	1,150	1,300	1,600	1,800	1,800	2,000	2,500	2,500	2,700	3,200
Weight of Boiler and Fixtures, complete.....about	6,500	6,950	7,450	8,450	10,200	12,400	13,700	14,700	16,000	18,200	19,100	21,300	23,800

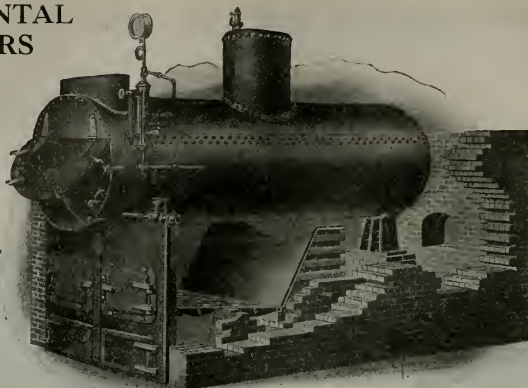
FIXTURES

With a Boiler ordered "complete" the following fixtures are sent: Check Valve, Grates, Water Gauge, Safety Valve, Stop Valve, Steam Gauge, Gauge Cocks, Blow-off Valve, Smoke Stack and Guys.

All steam openings 2 inches and larger are reinforced. All smoke stacks, up to and including 28 inches diameter, are No. 16 gauge, and larger diameters of No. 14, unless otherwise ordered; if heavier gauge is required, a proportionate charge will be made.

Every boiler is tested and inspected, before shipment, by a responsible Steam Boiler Inspection and Insurance Company, at 150 pounds hydrostatic pressure per square inch, and the purchaser can have a certificate of inspection and a policy of insurance for one year issued by the Insurance Company. This policy is payable to the purchaser, and will be in force and valid wherever the boiler is located.

Every Boiler is Thoroughly Tested Under Steam Before it Leaves the Shops

HORIZONTAL
BOILERS

This engraving illustrates our Standard Horizontal Tubular Boiler with Half-Arch Front Setting. It is built of open-hearth, homogeneous flange steel plate, guaranteed by the makers to turn down double (cold) without fracture. All Boilers above 36 inches in diameter have the dome flange double-riveted. The longitudinal seams are double-riveted, being lap-joint construction, with the exception of the 60 and 66 inch diameter Boilers, which are butt-joint. All Boilers above 12 feet in length are built in three rings.

The tubes are the best lap-weld quality, and are set in vertical and horizontal rows, permitting the best circulation within the Boiler. The heads are thoroughly braced with weldless steel braces of the most approved form.

All Boilers are tested and made thoroughly tight under 150 pounds hydrostatic pressure, and will pass for 100 pounds working pressure in districts where a special boiler ordinance is not in effect.

A certificate of test and inspection, issued by the Fidelity and Casualty Company, is furnished when desired. Insurance policy will be furnished, if ordered, at an extra cost.

The fittings and fixtures comprise: Britchen, front with doors and liners, grates, grate-bearer, rear-arch bars, rear ash door and frame, boiler stand, safety valve, steam gauge, water gauge, water column attached, gauge cocks, blow-off cock, check valve, stock cock, whistle and pipe, smoke stack and gully rods four times the length of the stack. **Injector will be furnished, when ordered, at an extra cost.**

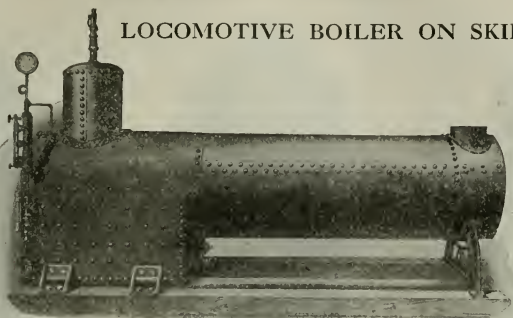
These Boilers are regularly furnished with steel tubes, but can be furnished with charcoal iron tubes, if desired, at an extra cost. See index.

SPECIFICATIONS

DESCRIPTION	BOILER SIZE							
Number	18	19	20	22	24	25	26	
Horse-power	10	12	15	20	25	30	35	
Diameter of Shell, inches	30	30	36	36	36	42	44	
Length of Tubes, feet	7	8	8	10	12	10	12	
Diameter of Tubes, inches	3	3	3	3	3	3	3½	
Number of Tubes	20	20	22	24	26	40	28	
Diameter of Dome, inches	18	18	20	20	20	22	22	
Height of Dome, inches	20	20	22	22	22	24	24	
Thickness of Shell, inch	¼	¼	¼	¼	¼	½	½	
Thickness of Dome Plate, inch	¼	¼	¼	¼	¼	½	½	
Thickness of Heads, inch	¾	¾	¾	¾	¾	¾	¾	
Length of Grates, inches	32	32	35½	35½	41½	35½	41½	
Width of Grates, inches	30	30	36	36	36	42	44	
Diameter of Stack, inches	14	14	16	16	16	20	20	
Length of Stack, feet	24	24	24	28	30	30	30	
No. of Steel in Stack	16	16	16	16	16	16	16	
Weight of Boiler and Britchen, lbs., about	1,600	1,750	2,200	2,700	3,400	3,550	4,800	
Weight of Boiler and Half-Arch Fixtures, lbs., about	3,000	3,150	3,800	4,400	5,100	5,750	6,600	
List Price of Boiler complete	\$275.00	\$293.00	\$344.00	\$408.00	\$480.00	\$535.00	\$596.00	
Number	27	28	29	30	31	32	34	
Horse-power	40	45	50	60	70	80	100	
Diameter of Shell, inches	44	48	48	54	54	60	66	
Length of Tubes, feet	14	12	14	14	16	16	16	
Diameter of Tubes, inches	3½	3½	3½	3½	3½	4	4	
Number of Tubes	28	32	32	44	44	44	54	
Diameter of Dome, inches	22	26	26	30	30	32	32	
Height of Dome, inches	24	28	28	34	34	36	36	
Thickness of Shell, inch	½	½	½	½	½	½	¾	
Thickness of Dome-plate, inch	½	½	½	½	½	½	¾	
Thickness of Heads, inch	¾	¾	¾	¾	¾	¾	¾	
Length of Grates, inches	47½	47½	47½	47½	53	53	53	
Width of Grates, inches	44	48	48	54	54	60	66	
Diameter of Stack, inches	20	22	22	26	26	28	30	
Length of Stack, feet	35	40	40	40	45	45	50	
No. of Steel in Stack	16	16	16	14	14	14	12	
Weight of Boiler and Britchen, lbs., about	4,900	5,600	6,200	8,000	8,800	11,000	12,800	
Weight of Boiler and Half-Arch Fixtures, lbs., about	7,400	8,700	9,300	11,750	12,800	15,550	17,900	
List Price of Boiler complete	\$669.00	\$787.00	\$857.00	\$1070.00	\$1183.00	\$1329.00	\$1566.00	

HORIZONTAL BOILERS

LOCOMOTIVE BOILER ON SKIDS



This engraving illustrates our Water Front and Open Bottom Locomotive Type Boiler on Skids. Many years of experience have proven this to be the best type of portable boiler. With the open bottom there is no dead water space below the grate surface, such as exists in the water-bottom boilers, to soon fill up with mud and sediment. The open bottom permits the free discharge and easy removal of ashes, thus providing sufficient draft for all fuels. This is not the case with the water bottom type of boiler, as the ash pit door opening, through which the ashes must be removed, is comparatively small, making difficult the removal of the ashes, and impairing the draft. Only the poorer grades of fuel are to be had in many sections, which means that free draft must be had to secure entirely satisfactory steaming.

The Water Front is superior to the cast iron front furnished by many, as it affords additional heating surface in the fire box, and does not crack and warp as is often the case with the latter type. We can, therefore, recommend the Water Front and Open Bottom Boiler as being superior to the water bottom boiler with cast iron front.

These Boilers are made of open hearth, homogeneous flange steel plates, being provided with stay bolts of the best quality of refined iron, and thoroughly braced and stayed throughout. Six hand holes are supplied, one in the front head above the crown sheet, four in the bottom of the water leg, and one in the rear head under the tubes.

The 50 and 60 horse powers also have a man hole in the rear head above the tubes.

All Boilers are tested and made thoroughly tight under 150 pounds hydrostatic pressure, and will pass for 100 pounds working pressure in districts where a special boiler ordinance is not in effect. A certificate of test and inspection, issued by the Fidelity & Casualty Company, is furnished when desired. Insurance policy will be furnished, if ordered, at an extra cost.

The fittings and fixtures comprise grates, water column attached with gauge cocks, water gauge steam gauge, safety valve, check valve, stop cock, whistle, blow-off valve, stack and guy rods (four times the length of the stack). Injector will be furnished, when ordered, at an extra cost. See index.

SPECIFICATIONS

Boiler No.	3	4	5	6	7	8	9	10	11	12
Horse Power	10	12	15	20	25	30	35	40	50	60
Diameter of Boiler, in. . .	32	32	32	34	36	36	40	42	48	48
Length of Fire Box, in. . .	38	38	44	52	52	52	52	54	54	64
Height of Fire Box, in. . .	33	33	33	36	38	40	42	46	52	52
Width of Fire Box, in. . .	26	26	26	28	30	30	34	36	42	42
Number of 3-in. Tubes. . .	26	26	26	28	34	34	40	43	56	56
Length of Tubes, in. . . .	66	72	78	90	96	120	102	120	126	144
Thickness of Shell, in. . .	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$
Thickness of Furnace Plates, in.	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Thickness of Tube Sheets and Heads, in.	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
Size of Dome, in.	18x22	18x22	18x22	20x24	20x24	20x24	22x26	22x26	26x30	26x30
Diameter of Stack, in. . . .	14	14	14	16	16	16	20	20	22	22
Length of Stack, ft.	16	18	20	25	25	25	25	25	35	35
No. of Steel in Stack. . . .	16	16	16	16	16	16	16	16	16	16
Weight of Bare Boiler on Skids, lbs.	3,400	3,500	3,800	4,550	5,300	5,800	6,600	7,500	10,000	11,000
Weight of Boiler, complete with fixtures, lbs.	4,050	4,200	4,400	5,600	6,300	6,900	7,800	8,800	11,700	12,700
Price of Boiler complete.	\$367.00	\$387.00	\$409.00	\$488.00	\$527.00	\$601.00	\$664.00	\$754.00	\$973.00	\$1044.00

FOR LARGER BOILERS, SEE INDEX

VERTICAL BOILERS



Fig. 90A. Standard Boiler

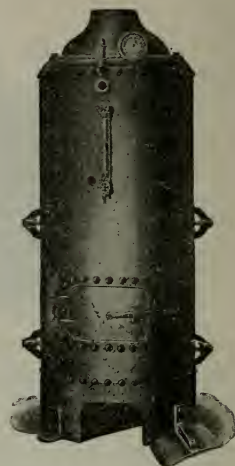
Fig. 90B. Standard
Round Base with Iron Bottom

Fig. 91. Class E Boiler

This type of Boiler is especially desirable where space is limited. Being easily handled and a quick steamer, it is very popular with Contractors for hoisting and pumping. It is also extensively used in small manufacturing plants.

Particular attention is called to our round base, equipped with wrought-iron bottom. This bottom is securely fastened, and has an air-space between the bottom of the base and the boiler. By this means, the use of brick may be obviated when using the Boiler on a wooden floor, with perfect safety.

The type "E" is our standard "Full-Length-Tube" Vertical Boiler, built with shell extended, thereby obviating the use of separate base, thus making it desirable when space is limited. Many users prefer this type of Boiler, since the separate base is not required. This fact makes it exceptionally popular with the Contractors and the Manufacturers of Cement and Concrete Mixers and on all machinery where it is necessary to mount a Boiler. The necessary angles for fastening the Boiler are supplied to suit the machine on which the Boiler is to be mounted.

They are made of open-hearth, homogeneous, flange steel plates having a tensile strain of 55,000 pounds per square inch of section. All sizes above 20 inches are well braced by means of stay bolts, and all Boilers 30 inches and upward in diameter have the vertical seams double-riveted. From No. 6 to No. 13 inclusive, the shells are made of a single sheet. The heads are drilled. All Boilers are tested and made thoroughly tight under hydrostatic pressure of 150 pounds, and will pass for 100 pounds working pressure in districts where a special boiler ordinance is not in effect. We are also equipped to build them in accordance with the various local boiler ordinances in effect. A certificate of test and inspection, issued by the Fidelity and Casualty Company, is furnished when desired. Insurance policy will be furnished, if ordered, at an extra cost.

Boilers 20 inches to 30 inches in diameter have two, and the larger sizes three, hand-holes around the water-leg and the same number above the crown sheet. In Boilers 20 inches in diameter the water-space around the fire-box is 1½ inches wide; in the 24 inches in diameter, 2 inches; and in all other sizes, 2½ inches wide.

The fixtures comprise base, grate, hood, steam gauge, glass water gauge, gauge cocks, pop safety valve, blow-off valve, check and stop cock. Injectors and stacks will be furnished, when ordered, at an extra price. See index. An extra charge is made for round base with iron bottom.

On the opposite page will be found tables of dimensions and specifications on the above "Full-Length-Tube" Vertical Boilers.

Standard "Full-Length-Tube" Vertical Boilers

SPECIFICATIONS

Number	0	A	B	1	2	3	3½	4	5
Horse-power	1½	2	3	4	5	6	6	8	10
Diameter of Boiler, inches	20	20	20	24	24	24	27	30	30
Height of Boiler, feet	3	3½	4	4	5	6	5	5	6
Diameter of Furnace, inches	16	16	16	19	19	19	21	24	24
Height of Furnace, inches	18	18	18	23	23	23	25	26	26
Thickness of Shell, inch	⅝	⅝	⅝	¾	¾	¾	¾	¾	¾
Thickness of Heads, inch	⅝	⅝	⅝	¾	¾	¾	¾	¾	¾
Thickness of Furnace Plate, inch	⅝	⅝	⅝	¾	¾	¾	¾	¾	¾
Number of Tubes (all 2 inches in diam.)	16	19	19	24	24	24	30	48	48
Length of Tubes, inches	18	24	30	25	37	49	33	34	46
Square Feet of Heating Surface	18	26	31	36	49	61	56	85	111
Diameter of Stack, inches	8	8	8	8	8	8	10	12	12
Weight of Bare Boiler, about	250	425	475	770	870	950	980	1,185	1,395
Weight of Complete Boiler, about	580	650	700	1,070	1,170	1,250	1,330	1,685	1,895
Price of Boiler complete	\$57.00	\$63.00	\$69.00	\$102.00	\$114.00	\$125.00	\$134.00	\$162.00	\$167.00

"FULL-LENGTH-TUBE" VERTICAL BOILERS—Continued

Number	6	7	8	9	10	11	12	13	14
Horse-power	12	14	15	16	18	20	22	25	27
Diam. of Boiler, inches	30	36	36	36	36	36	42	42	42
Height of Boiler, feet	7	6	6	7	7	8	7	7½	8
Diam. of Furnace, inches	24	30	30	30	30	30	36	36	36
Height of Furnace, inches	26	26	26	26	26	26	30	30	30
Thickness of Shell, inch	¾	¾	¾	¾	¾	¾	¾	¾	¾
Thickness of Heads, inch	¾	¾	¾	¾	¾	¾	¾	¾	¾
Thickness of Furnace Plate, inch	¾	¾	¾	¾	¾	¾	¾	¾	¾
Number of Tubes (all 2 in. in diam.)	48	66	72	66	72	72	92	92	92
Length of Tubes, inches	58	46	46	58	58	68	56	61	68
Square Feet of Heating Surface	136	151	165	186	201	232	252	272	299
Diameter of Stack, inches	12	15	15	15	15	15	18	18	18
Weight of Bare Boiler, about	1,600	1,800	1,900	2,100	2,225	2,450	2,825	2,975	3,200
Weight of Complete Boiler, about	2,100	2,475	2,575	2,775	2,900	3,125	3,750	3,900	4,125
Price of Boiler Complete	\$182.00	211.00	216.00	234.00	240.00	263.00	285.00	300.00	315.00

Number	15	16	17	18	19	20	21	22
Horse-power	30	35	40	45	50	60	70	80
Diameter of Boiler, inches	42	42	48	48	48	54	54	54
Height of Boiler, feet	8½	9½	8½	9	10	9	10	12
Diameter of Furnace, inches	36	36	42	42	42	48	48	48
Height of Furnace, inches	30	30	30	30	30	30	30	30
Thickness of Shell, inch	¾	¾	¾	¾	¾	¾	¾	¾
Thickness of Heads, inch	¾	¾	¾	¾	¾	¾	¾	¾
Thickness of Furnace Plate, inch	¾	¾	¾	¾	¾	¾	¾	¾
Number of Tubes (all 2 inches in diam.)	92	92	130	130	130	172	172	172
Length of Tubes, inches	74	85	74	80	90	80	90	114
Square Feet of Heating Surface	324	368	453	486	543	639	714	894
Diameter of Stack, inches	18	18	20	20	20	24	24	24
Weight of Bare Boiler, about	3,255	3,455	4,250	4,425	4,750	6,100	6,700	7,100
Weight of Complete Boiler, about	4,300	4,600	5,375	5,550	5,875	7,500	8,100	9,000
Price of Boiler Complete	\$329.00	353.00	436.00	458.00	495.00	617.00	682.00	744.00

20-inch Boilers are equipped with Lever Safety Valves and Round Bases without Bottom. Round Bases with Wrought-Iron Bottom are not furnished with 20-inch Boilers. There will be a slight additional charge for Round Base with Wrought-Iron Bottom. Boilers Nos. 20, 21 and 22 have flat iron plate bases to set on brick walls.

Fig. 91. CLASS "E"

Number	O-E	A-E	B-E	1-E	2-E	3-E	3½-E	4-E
Horse-power	1½	2	3	4	5	6	6	8
Diameter of Boiler, inches	20	20	20	24	24	24	27	30
Height of Boiler, feet and inches	36"	4'	4'6"	4'6"	5'6"	6'6"	5'6"	5'8"
Diameter of Furnace, inches	16	16	16	19	19	19	21	24
Height of Furnace, inches	18	18	18	22	22	22	26	26
Thickness of Shell, inch	¾	¾	¾	¾	¾	¾	¾	¾
Thickness of Heads, inch	¾	¾	¾	¾	¾	¾	¾	¾
Thickness of Furnace Plate, inch	¾	¾	¾	¾	¾	¾	¾	¾
Number of Tubes (all 2 inches in diam.)	16	19	19	24	24	24	30	48
Length of Tubes, inches	18	24	30	25	37	49	33	34
Square Feet of Heating Surface	18	26	31	36	49	61	56	85
Diameter of Stack, inches	8	8	8	8	8	8	10	12
Weight of Bare Boiler, about	400	475	525	750	850	930	950	1,120
Weight of Complete Boiler, about	550	625	675	930	1,030	1,110	1,150	1,450
Price of Boiler Complete	\$57.00	63.00	69.00	102.00	114.00	125.00	134.00	152.00

Number	5-E	6-E	7-E	8-E	9-E	10-E	11-E	12-E
Horse-power	10	12	14	15	16	18	20	22
Diameter of Boiler, inches	30	30	36	36	36	36	36	42
Height of Boiler, feet and inches	6'8"	7'3"	6'9"	6'9"	7'9"	7'9"	8'9"	7'8"
Diameter of Furnace, inches	24	30	30	30	30	30	30	36
Height of Furnace, inches	28	26	26	26	26	26	26	30
Thickness of Shell, inch	¾	¾	¾	¾	¾	¾	¾	¾
Thickness of Heads, inch	¾	¾	¾	¾	¾	¾	¾	¾
Thickness of Furnace Plate, inch	¾	¾	¾	¾	¾	¾	¾	¾
Number of Tubes (all 2 inches in diam.)	48	48	66	72	66	72	72	92
Length of Tubes, inches	46	58	46	46	58	58	68	56
Square Feet of Heating Surface	111	138	151	165	186	201	232	252
Diameter of Stack, inches	12	12	15	15	15	18	18	24
Weight of Bare Boiler, about	1,330	1,535	1,725	1,825	2,025	2,150	2,375	2,755
Weight of Complete Boiler, about	1,660	1,865	2,125	2,225	2,425	2,550	2,775	3,175
Price of Boiler Complete	\$167.00	182.00	211.00	216.00	234.00	240.00	263.00	285.00

Number	13-E	14-E	15-E	16-E	17-E	18-E	19-E	20-E	21-E	22-E
Horse-power	25	27	30	35	40	45	50	60	70	80
Diam. of Boiler, inches	42	42	42	42	48	48	48	54	54	54
Height of Boiler, ft. and in.	8'2"	8'2"	9'2"	10'2"	9'8"	9'8"	10'7"	9'8"	10'7"	12'7"
Diameter of Furnace, inches	26	36	36	42	42	42	48	48	48	48
Height of Furnace, inches	30	30	30	30	30	30	30	30	30	30
Thickness of Shell, inch	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Thickness of Heads, inch	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Thickness of Furnace Plate, inch	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Number of Tubes (all 2 in. in diameter)	92	92	92	92	130	130	130	172	172	172
Length of Tubes, inches	61	68	74	85	74	80	90	80	90	114
Sq. Feet of Heating Surface	272	299	324	368	453	486	543	639	714	894
Diameter of Stack, inches	18	18	18	18	20	20	20	24	24	24
Weight of Bare Boiler, about	2,895	3,120	3,295	3,595	4,150	4,325	4,650	5,975	6,575	7,575
Wt. of Comp. Boiler, about	3,225	3,550	3,725	4,025	4,650	4,825	5,150	6,675	7,275	8,275
Price of Boiler Complete	\$300.00	315.00	329.00	353.00	436.00	458.00	495.00	617.00	682.00	744.00

20 inch Boilers are equipped with Lever Safety Valves.

LAP WELDED STEEL BOILER TUBES



Our boiler tubes are made of open hearth steel and conform to standard specifications adopted 1915, by American Society for Testing Materials.

All Weights and Dimensions are Nominal

Diameters		Thickness		Weight per Foot		Length of Tube per square foot		Square Feet of Surface per Lineal foot	
External	Internal	Inches	B. W. G.	Exact Theoretical Weight	Approx. Manufacturing Weight	External Surface	Internal Surface	External Surface	Internal Surface
1 3/4	1.560	.095	13	1.679	1.84	2.182	2.448	.458	.408
2	1.810	.095	13	1.932	2.10	1.909	2.110	.523	.473
2 1/4	2.060	.095	13	2.186	2.38	1.697	1.854	.589	.539
2 1/2	2.282	.109	12	2.783	3.00	1.527	1.673	.654	.597
2 3/4	2.532	.109	12	3.074	3.37	1.388	1.508	.719	.662
3	2.782	.109	12	3.365	3.74	1.273	1.373	.785	.728
3 1/4	3.010	.120	11	4.011	4.45	1.175	1.269	.850	.783
3 1/2	3.260	.120	11	4.331	4.81	1.081	1.171	.916	.853
3 3/4	3.510	.120	11	4.652	5.17	1.018	1.088	.981	.918
4	3.732	.134	10	5.532	6.08	.954	1.023	1.047	.977
4 1/2	4.232	.134	10	6.248	6.87	.848	.902	1.178	1.107
5	4.704	.148	9	7.669	8.12	.763	.812	1.308	1.231
6	5.670	.165	8	10.282	10.8	.636	.673	1.570	1.484
7	6.670	.165	8	12.044	12.6	.545	.572	1.832	1.746
8	7.670	.165	8	13.807	14.5	.477	.498	2.094	2.008
9	8.640	.180	7	16.955	17.7	.424	.442	2.356	2.261
10	9.594	.203	6	21.240	22.1	.381	.398	2.617	2.511
11	10.560	.220	5	25.329	26.3	.347	.361	2.879	2.764
12	11.542	.229	—	28.788	29.8	.318	.330	3.141	3.021
13	12.524	.238	4	32.439	33.6	.293	.304	3.403	3.278
14	13.504	.248	—	36.424	37.7	.272	.282	3.665	3.535
15	14.482	.259	3	40.775	42.1	.254	.263	3.926	3.791
16	15.460	.270	—	45.359	46.8	.238	.247	4.188	4.047

Beading Tools are listed in index.

LIST PRICES PER FOOT

External Diameter inches	Standard Thickness Minimum		Price, per foot			
	Birmingham Wire Gauge	Inches	Standard Thickness	One Extra Wire Gauge	Two Extra Wire Gauges	Three Extra Wire Gauges
1 3/4	13	.095	\$0.22	\$0.26	\$0.28	\$0.31
2	13	.095	.21	.24	.26	.28
2 1/4	13	.095	.24	.27	.29	.32
2 1/2	12	.109	.30	.33	.36	.39
2 3/4	12	.109	.34	.37	.40	.44
3	11	.109	.38	.41	.45	.49
3 1/4	11	.120	.45	.49	.53	.59
3 1/2	11	.120	.48	.53	.58	.64
3 3/4	11	.120	.52	.57	.62	.68
4	10	.134	.61	.66	.73	.79
4 1/2	10	.134	.69	.75	.83	.89
5	9	.148	.81	.90	.97	1.08
6	8	.165	1.08	1.17	1.31	1.41
7	8	.165	1.27	1.38	1.54	1.66
8	8	.165	1.45	1.58	1.76	1.90
9	7	.180	1.78	1.99	2.15	2.31
10	6	.203	2.22	2.39	2.57	2.79
11	5	.220	2.63	2.84	3.07	3.35
12	—	.229	2.99	3.23	3.51	3.76
13	4	.238	3.36	3.64	3.98	4.19

Boiler Tubes to special specifications, special prices on application.

Tubes more than four gauges heavier than standard will be charged per pound.

WE HAVE ON HAND A LARGE STOCK OF TUBES AND FERRULES

GRATE BARS

These bars are cast to order—Price on Application

IMPROVED GRATE BAR

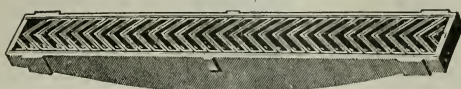


Fig. 1211

Length, Inches	Weight, lbs.	Metal, Inches	Air Space, Inches	Weight, lbs.
33	6	$\frac{1}{2}$	$\frac{1}{2}$	65
36	6	$\frac{1}{2}$	$\frac{1}{2}$	73
42	6	$\frac{1}{2}$	$\frac{1}{2}$	86
48	6	$\frac{1}{2}$	$\frac{1}{2}$	100
54	6	$\frac{1}{2}$	$\frac{1}{2}$	115
60	6	$\frac{1}{2}$	$\frac{1}{2}$	130
66	6	$\frac{1}{2}$	$\frac{1}{2}$	142
72	6	$\frac{1}{2}$	$\frac{5}{8}$	160

COMMON GRATE BARS



Fig. 1208, Single Light Pattern

Length, Inches	Width, Inches	Weight, lbs.
24	$2\frac{3}{4}$	10
26	$2\frac{3}{4}$	11
27	$2\frac{3}{4}$	12
28	$2\frac{3}{4}$	13
30	$2\frac{3}{4}$	14
33	$2\frac{3}{4}$	17
36	3	18
42	3	20
48	3	24
54	3	27
60	3	34
66	$3\frac{1}{2}$	52
72	$3\frac{1}{2}$	57



Fig. 1207, Double, Light Pattern

Length, Inches	Width, Inches	Weight, lbs.	All Space, Inches
24	$2\frac{3}{4}$	20	$\frac{1}{2}$
26	$2\frac{3}{4}$	22	$\frac{1}{2}$
27	$2\frac{3}{4}$	23	$\frac{1}{2}$
28	$2\frac{3}{4}$	24	$\frac{1}{2}$
30	$2\frac{3}{4}$	26	$\frac{1}{2}$
33	$2\frac{3}{4}$	34	$\frac{1}{2}$
36	3	36	$\frac{1}{2}$
42	3	40	$\frac{1}{2}$
48	3	48	$\frac{1}{2}$
54	3	54	$\frac{1}{2}$
60	3	68	$\frac{1}{2}$
66	$3\frac{1}{2}$	104	$\frac{5}{8}$
72	$3\frac{1}{2}$	114	$\frac{3}{4}$

GRATES FOR UPRIGHT BOILERS

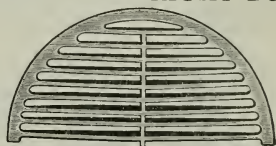
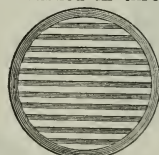
Fig. 1214, In Two Parts
Also furnished in three parts

Fig. 1213, In One Piece

Diam., In.	Lbs.
16	45
18	50
20	75
22	85
24	95
25	100
26	120
27	122
28	125
29	145
30	150
32	180
34	190
35	225
36	235
40	425
42	430
43	440

We are in position to furnish on short notice sizes and types not listed above.

FUSIBLE PLUGS—FLUE BLOWERS



Regular Length
Fig. 750. For Out-
side Insertion
Fig. 751. For In-
side Insertion



Fig. 752. For Out-
side Insertion



Fig. 753. For In-
side Insertion

RECOMMENDATIONS

Nos. 750 and 751 for ordinary service.
Nos. 752 and 753 to comply with the rules issued June 30, 1914, by the Steamboat Inspection Service of the United States Government.

Nos. 752 and 753 to comply with the various State and City Laws requiring Fusible Plugs with extensions.
Plugs should be installed in direct passage of the fire or gases with small end of the Banca Tin exposed to the fire or gases. These Plugs are NOT to be used inside a steam drum, etc., where the temperature of the steam is used as a fusing agent.

STAMPING

Nos. 750 and 751 are stamped as shown.

Nos. 752 and 753 are stamped as shown and in addition have the heat number stamped in compliance with the Steamboat Inspection Service of the United States Government.

CONSTRUCTION

The No. 750 is made regular length and constructed for outside insertion. The No. 751 is made regular length and constructed for inside insertion. The No. 752 is made extra long (having an extension one inch beyond the thread) and constructed for outside insertion only. The No. 753 is made extra long and constructed for inside insertion only. We can furnish these to order any length desired, at special prices according to quantity wanted.

ORDERING

In ordering, always give style, number and size.

When not otherwise specified, the outside type will be furnished as follows:

No. 750—For ordinary service.

No. 752—For the Steamboat Inspection Service of the United States Government and for various State and City Laws.

OUTSIDE OR FIRE SIDE

Size	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2
No. 750 and No. 751.....	each	\$0.60	.75	1.00	1.50	2.00	3.00
No. 752 and No. 753.....	each	1.20	1.50	2.00	3.00	4.00	6.00

Our Fusible Plugs are filled with BANCA TIN.

STEAM FLUE BLOWERS



Fig. 286

Made in two styles: One for Horizontal Boilers as shown in cut and one for Vertical Boilers. These Blowers are simple in construction and easy to operate.

Size Number of Blower	Size of Tubes Outside Diameter Inches	Size of Steam Hose Inches	Size of Pipe Thread Nipple Inches	Price, Including Clamps for Hose and Nipple Each
0	1 $\frac{1}{4}$ to 1 $\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	\$ 5.00
1	2 to 2 $\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	5.00
2	2 $\frac{1}{2}$ to 2 $\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	6.25
3	3 to 3 $\frac{1}{4}$	1	1	7.50
4	3 $\frac{1}{2}$ to 3 $\frac{3}{4}$	1	1	8.75
5	4 to 4 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	10.00
6	5 to 6	1 $\frac{1}{2}$	1 $\frac{1}{2}$	12.50

Unless otherwise instructed, Blowers for Horizontal Boilers will always be furnished.

For Vertical Boilers give diameter of Fire Box and height from tube sheet to bottom of furnace door. For Locomotive Boilers state length of fire box.

The above prices for Blowers do not include Steam Hose or Globe Valves. See Index.

OUR STOCK OF ENGINE AND BOILER ROOM SUPPLIES IS ALWAYS COMPLETE.

GARDNER SPRING GOVERNORS

In Ordering, State Speed Desired to Run

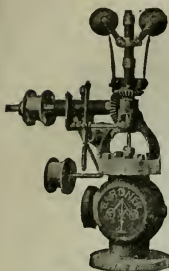


Fig. 455A
Spring—Class A
Automatic Stop

Size Gov'r. Diam. Open'g.	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
Class B, Plain.....	\$14.00	\$16.00	\$18.00	\$21.00	\$25.00
Class B, Finished.....	16.00	18.00	20.00	24.00	29.00
Class A, Plain.....		18.50	21.00	24.50	29.50
Class A, Finished.....		20.50	23.00	27.50	33.50
Size Gov'r. Diam. Open'g.	2	$2\frac{1}{4}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$
Class B, Plain.....	\$30.00	\$35.00	\$40.00	\$50.00	\$60.00
Class B, Finished.....	34.00	40.00	45.00	58.00	69.00
Class A, Plain.....	36.00	42.00	48.00	59.00	71.00
Class A, Finished.....	40.00	47.00	53.00	67.00	80.00
Size Gov'r. Diam. Open'g.	4	$4\frac{1}{2}$	5	....	....
Class B, Plain.....	\$71.00	\$83.00	\$94.00	....	....
Class B, Finished.....	81.00	94.00	106.00	....	....
Class A, Plain.....	83.00	96.00	109.00	....	....
Class A, Finished.....	93.00	107.00	121.00	....	....

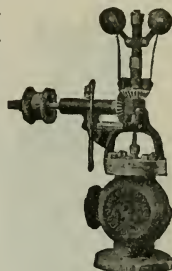
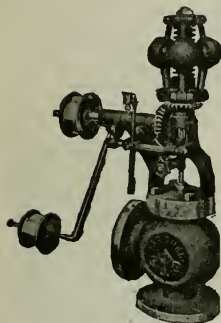


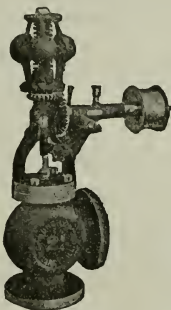
Fig. 455B
Class B—Without
Automatic Stop

Class B is without automatic stop, and Class A is with automatic stop.

GARDNER WIDE RANGE GOVERNOR



Class A
Fig. 455C



Class B
Fig. 455D

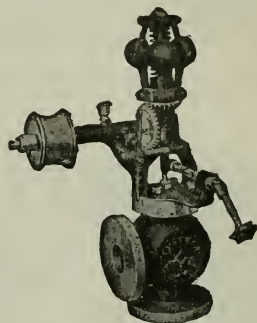


Fig. 455E
With Extension to Speeding
Attachment

This Governor Permits a Range of Speed of 500 Per Cent Without in the Least Affecting Regulation

Size Dia. Open.	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6	7
Class A ea	\$18.50	\$21.00	\$24.50	\$29.50	\$36.00	\$42.00	\$48.00	\$59.00	\$71.00	\$83.00	\$96.00	\$109.00	\$140.00	\$170.00
Class B ea	16.00	18.00	21.00	25.00	30.00	35.00	40.00	50.00	60.00	71.00	83.00	94.00	122.00	150.00

DAVIS STEAM TRAP

Suitable for any Working Pressure up to 200 lbs.

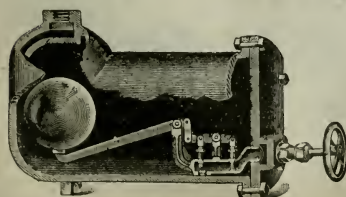
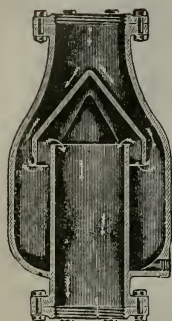
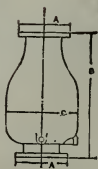
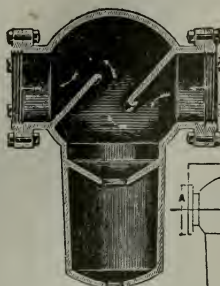
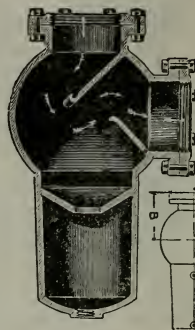


Fig. 454A

No.	Each	Capacity 1 inch Pipe	Capacity Square Feet Radiating Surface	Size Inlet and Outlet Inches
00	\$15.00	1500	500	$\frac{1}{2}$
0	20.00	3000	1000	$\frac{3}{4}$
1	30.00	6500	2175	1
2	45.00	15000	5000	$1\frac{1}{4}$
3	60.00	20000	6675	$1\frac{1}{2}$
4	80.00	30000	10000	2
5	100.00	40000	13350	$2\frac{1}{2}$
6	125.00	60000	20000	3

WE CARRY AT ALL TIMES A COMPLETE STOCK OF ENGINE ROOM SUPPLIES

GARDNER STEAM SEPARATORS

Fig. 453A
VerticalFig. 453B
HorizontalFig. 453C
Angle

Size, Inches	Each	Vertical Separator					Horizontal Separator					Angle Separator					Horizontal and Angle	
		Weight	Dimensions			Size of Drain	Dimensions			Size of Drain	Weight	Dimensions			Size of Drain	Weight		
			A	B	C		A	B	C			A	B	C				
2	\$40.00	60	7	14 1/2	8	1/2	6	10	12 1/2	7	5	12 1/2	5	12 1/2	1/2	61		
2 1/2	45.00	75	7	14 1/2	8	1/2	7	10	12 1/2	6	5	12 1/2	5	12 1/2	1/2	66		
3	50.00	115	8 1/2	17 1/2	10	3/4	7 1/2	12	15 1/4	7 1/2	6	15 1/4	6	15 1/4	3/4	98		
3 1/2	60.00	117	8 1/2	17 1/2	10	3/4	8 1/2	12	15 1/4	8 1/2	6	15 1/4	6	15 1/4	3/4	110		
4	70.00	188	9 1/4	21	12	1	9	14	16 1/2	9	7	16 1/2	7	16 1/2	1	152		
4 1/2	75.00	192	9 1/4	21	12	1	9 1/4	14	16 1/2	9 1/4	7	16 1/2	7	16 1/2	1	155		
5	80.00	220	11	25	15 1/2	1	10	15	19	10	7 1/2	19	10	19	1 1/4	200		
5 1/2	110.00	315	11	25	15 1/2	1	11	18	21	11	9	21	11	21	1 1/4	300		
6	125.00	450	13 1/2	32	18 1/2	1 1/4	13 1/2	21	24	13 1/2	10 1/2	24	13 1/2	24	1 1/2	425		
6 1/2	160.00	500	13 1/2	32	18 1/2	1 1/4	13 1/2	24	24	13 1/2	10 1/2	24	13 1/2	24	1 1/2	450		
7	180.00	950	16	39 1/2	24 1/4	1 1/2	15	24	26 3/4	15	12	26 3/4	15	12	1 1/2	900		
8	220.00	1,000	16	39 1/2	24 1/4	1 1/2	16	27	30	16	13 1/2	30	16	13 1/2	2	955		
9	250.00	1,100	19	47	32 1/2	2	19	28	32	19	14	32	19	14	2	1,050		
10	300.00	1,350	21	55	40	2	21	30	36	21	15	36	21	15	2	1,250		

THE DAVIS PRESSURE REGULATOR

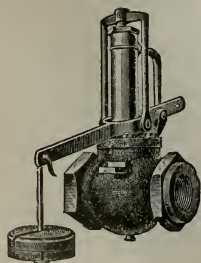
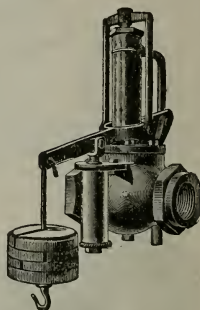
Suitable for any Initial Pressure up to 200 Pounds

Sizes 1 1/4 inch and less have bronze bodies; 1 1/2 inch and over are made of iron; 1 1/2 inch and less have screwed ends only; 2 inch to 6 inch, inclusive, have either screwed or flanged ends; 7 inch and over have flanged ends only. Unless otherwise ordered, screwed end valves are sent on orders for sizes less than 6 inch. It has no diaphragms, springs, or complicated parts to get out of order, and having full pipe openings, requires no by-pass.

No. 1 is designed for all purposes where there is no pulsation of pressure, viz.: steam heating, boiling, drying, distilling, and all places requiring a constant, unvarying pressure below that of boiler.

No. 2 is the same as No. 1, with the addition of oil cylinder or dash pot, and is to be used where there is vibration or pulsation of pressure, as in the steam pipe of engine or pump when valves are opened or closed, and in steam heating systems, caused by exhaust from engines, pumps, steam elevators, etc.

In ordering, state boiler pressure that is carried, purpose to be used for, and what pressure you wish to reduce to.

Fig. 454A
No. 1Fig. 454B
No. 2

Size, Inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	7	8	10
No. 1, each	\$20.00	\$20.00	\$22.00	\$24.00	\$25.00	\$30.00	\$35.00	\$40.00	\$60.00	\$75.00	\$100.00	\$135.00	\$175.00	\$275.00
No. 2, "	24.00	24.00	26.00	28.00	30.00	35.00	40.00	46.00	68.00	85.00	111.00	146.00	187.00	288.00

ELECTRIC MOTORS—EXHAUST HEADS

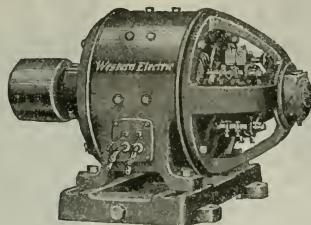


Fig. 1750

Being very conveniently located to the largest stocks of electric motors in the country, we are in position to furnish promptly any kind of motor that our customers may require.

The very highest grades of material are used in their construction. The care and attention devoted to the design and manufacture of these motors have resulted in a line which operates at very low cost and possesses perfect service reliability under the most severe conditions.

The motors we can furnish cover the entire range of possibilities for power units. They are made in sizes from 1/200 H. P. to 50 H. P. and up, and can be had for either alternating or direct current, or of the induction or repulsion type, or for single, two or three phase—in fact, there is no situation or condition which we cannot take care of with our lines of motors.

We invite your inquiries.

In writing us, please give us full particulars, advising kind of current and voltage, with whatever additional information you may have to offer, to assist us in studying out your problem and to recommend the proper units for your use.



Fig. 6363

THE LYMAN EXHAUST HEAD

For End of Pipe Above Roof

Completely stops the emission of water and grease from outlet of exhaust pipe, which is the cause of damage to roofs, walls, etc. Steam escapes dry. There is no back pressure.

The Lyman head is the only exhaust head made with brass hand-hole, which gives easy access to head, should the drip become clogged.

Brass expansion ring furnished with each head, so as to connect drip as an expansion joint.

In ordering, state size of pipe.



Fig. 6363. Interior

Standard couplings on all small heads 1 inch to 4½ inches and on standard flange on 5-inch and larger.

List Prices

Pipe size	inches	1 or 1½	2 or 2½	3 or 3½	4 or 4½	5	6	7
Approximate weight	lbs.	18	22	30	40	55	75	100
Drip Outlet to Head	inches	1½	1½	1½	1½	2	2	2
First Section of Drip, reduced	inches	¾	¾ or 1	¾ or 1	1	1 or 1½	1 or 1½	1 or 1½
Price		\$20.00	\$25.00	\$30.00	\$40.00	\$50.00	\$60.00	\$75.00

Pipe size	inches	8	9	10	12	14	16	18
Approximate weight	lbs.	125	160	190	240	350	460	550
Drip Outlet to Head	inches	2½	2½	2½	3	3	3½	4
First Section of Drip, reduced	inches	1½ or 1½	1½ or 1½	1½ or 2	1½ or 2	2 or 2½	2½ or 3	3 or 3½
Price		\$90.00	\$105.00	\$125.00	\$150.00	\$200.00	\$250.00	\$300.00

Price of heads 20 to 48 inches diameter on application.

FOR PIPE, FITTINGS AND BOILER ROOM SUPPLIES, SEE INDEX

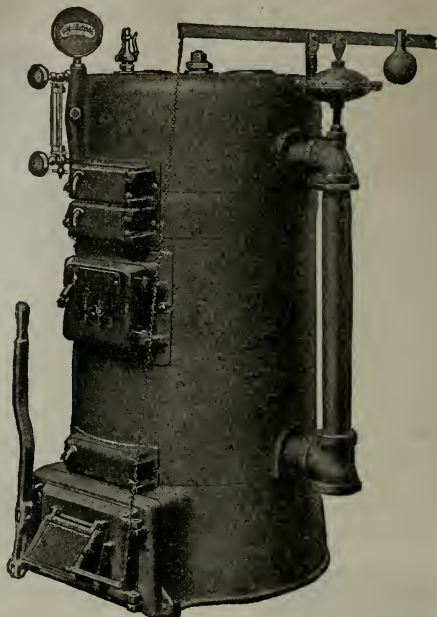
STEAM AND HOT WATER HEATING BOILERS

The principal consideration in a boiler is the ease with which it can be operated, its ability to do the work for long periods, and its economic features. The large fire chamber and the combustion space, together with the effective direct fire surfaces, with large flues, all tend to make it an economical boiler.

The fire pot has, without exception, more effective heat absorbing surface than other makes of fire pots from one to two inches larger in diameter. This is also true of the section and domes; their construction permitting twenty-five per cent more surface than the ordinary flat bottom type. They are compact and durable, show a high efficiency test and will do the work assigned to them when properly installed.

All boilers are assembled, thoroughly tested and inspected before leaving the factory; insuring material free from defects on arrival at destination.

Be sure and let us figure on your boiler requirements.



RATINGS AND PRICES

1909 Series—Steam

1909 Series—Water

No.	Dia. Grate inches	Grate Area sq. ft.	Sq. Ft. Fire-pot Heating Surface	Outlets, inches each	Inlets, inches each	Smoke Collar inches	Rating	Price	No.	Dia. Grate inches	Grate Area sq. ft.	Sq. Ft. Fire-pot Heating Surface	Outlets, inches each	Inlets, inches each	Smoke Collar inches	Rating	Price
1-16S	16	1.5	10.2	1-3	1-3	7	275	\$150	16-1W	16	1.5	10.2	1-3	1-3	7	450	\$135
1-18S	18	1.7	13.1	2-2½	2-2½	7	325	170	18-1W	18	1.7	13.1	2-2½	2-2½	7	525	150
2-18S	18	1.7	13.1	2-2½	2-2½	7	375	190	18-2W	18	1.7	13.1	2-2½	2-2½	7	600	170
3-18S	18	1.7	13.1	2-2½	2-2½	7	400	210	18-3W	18	1.7	13.1	2-2½	2-2½	7	650	190
1-21S	21	2.4	16.5	2-3	2-3	8	450	220	21-1W	21	2.4	16.5	2-3	2-3	8	750	200
2-21S	21	2.4	16.5	2-3	2-3	8	500	240	21-2W	21	2.4	16.5	2-3	2-3	8	825	220
3-21S	21	2.4	16.5	2-3	2-3	8	550	260	21-3W	21	2.4	16.5	2-3	2-3	8	900	240
2-24S	24	3	22	2-3	2-3	9	650	290	24-2W	24	3	22	2-3	2-3	9	1075	270
3-24S	24	3	22	2-3	2-3	9	700	310	24-3W	24	3	22	2-3	2-3	9	1175	290
4-24S	24	3	22	2-3	2-3	9	750	330	24-4W	24	3	22	2-3	2-3	9	1250	310
2-28S	28	4.2	26.8	2-3½	2-3½	10	875	365	28-2W	28	4.2	26.8	2-3½	2-3½	10	1425	340
3-28S	28	4.2	26.8	2-3½	2-3½	10	950	390	28-3W	28	4.2	26.8	2-3½	2-3½	10	1550	365
4-28S	28	4.2	26.8	2-3½	2-3½	10	1000	415	28-4W	28	4.2	26.8	2-3½	2-3½	10	1650	390
2-31S	31	5.2	31.8	2-4	2-4	10	1125	440	31-2W	31	5.2	31.8	2-4	2-4	10	1850	410
3-31S	31	5.2	31.8	2-4	2-4	10	1200	470	31-3W	31	5.2	31.8	2-4	2-4	10	2000	440
4-31S	31	5.2	31.8	2-4	2-4	10	1275	500	31-4W	31	5.2	31.8	2-4	2-4	10	2100	470
5-31S	31	5.2	31.8	2-4	2-4	10	1325	530	31-5W	31	5.2	31.8	2-4	2-4	10	2200	500

FOR BOILER AND FIRE ROOM TOOLS, SEE INDEX

RADIATOR VALVES AND FITTINGS

Fig. 47A.
Crane Valve

Fig. 202



Fig. 204



Fig. 206



Fig. 208



Key



Fig. 210

Fig. 47B.
Paul ValveAUTOMATIC AIR VALVES
For Direct Radiation

The Crane Valve will remove all air from a heating system, shuts off all steam and water automatically.
The Paul Valve, made with drain-pipe connection and designed to be used in connection with the Paul Vacuum or any other drain-pipe system of heating

Price, plated	Crane Valve	Paul Valve
.....each	1.25	1.25

COMPRESSION RADIATOR AIR VALVES

	Chased Iron Pipe	Plated
Size	.....inches	
No. 202, all brass	.....each	$\frac{3}{4}$
No. 204, wood wheel	.....each	.35
No. 206, wood wheel, with nose	.....each	.45
No. 208, lock and shield	.....each	.70
No. 210, lock and shield	.....each	.35
		.40
		.57

Keys for Nos. 208 and 210, extra; plated, each 18 cents.

MODULATING RADIATOR VALVES

Brass, Self-Adjusting Packed Stuffing Box, with Union

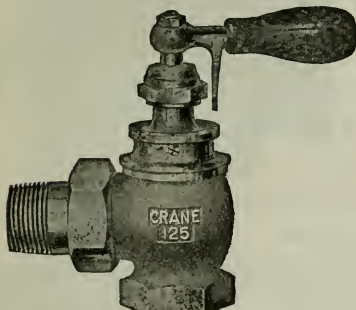


Fig. 231

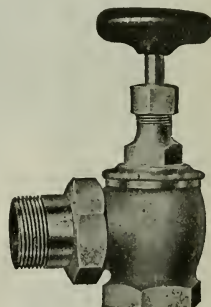
Figs. 192, 194, 196.
Union Elbow

Fig. 112. With Union

Size	.....inches	$\frac{3}{4}$	1	1½
No. 231, rough body, plated all over	.....each	3.90	4.70	6.25

These valves allow control of the steam flow to each radiator of a heating plant.

UNION ELBOWS
For Hot Water Radiators
Brass

Size	.....inches	$\frac{1}{2}$	$\frac{3}{4}$	1	1½	2
No. 192, rough body, plated all over	.....each	1.75	2.00	2.50	3.20	4.00
No. 194, finished all over	.....each	2.00	2.20	2.75	3.60	4.50
No. 196, finished and plated all over	.....each	2.25	2.40	3.00	3.90	4.85

To facilitate ordering, simply state size and number; the number sufficiently indicates the style and finish.
Finished, and Finished and Plated Elbows, are made to order only.

Fig. 112. RADIATOR VALVES
With Composition Discs, Wood Wheel

Size	.....inches	$\frac{1}{2}$	$\frac{3}{4}$	1	1½	2
No. 112, rough body, plated all over	.....each	3.15	3.80	4.75	6.40	8.10

These valves will satisfactorily answer the purpose where the jobs are small and the steam pressure is low. Still, for the small difference in cost, we recommend the use of our Standard Valve, which is heavier and is really a good article.

FOR HEATING BOILERS AND RADIATORS, SEE INDEX

RADIATORS—SPECIAL UNIONS

We illustrate on this page two radiators which are part of an extensive line we stock for prompt shipment. Nothing has been spared in assembling these radiators, and they represent the highest point of perfection in design, material and workmanship.

It is not possible for us to list the entire line we carry, and we invite your inquiries on any style you may have need for. We will give your correspondence our prompt attention and the prices we will quote will be highly interesting.

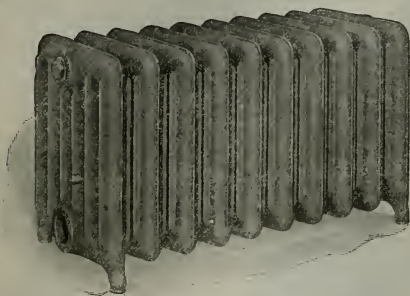


Fig. 8661. Niagara Six Column, 17 inches high, Steam or Water

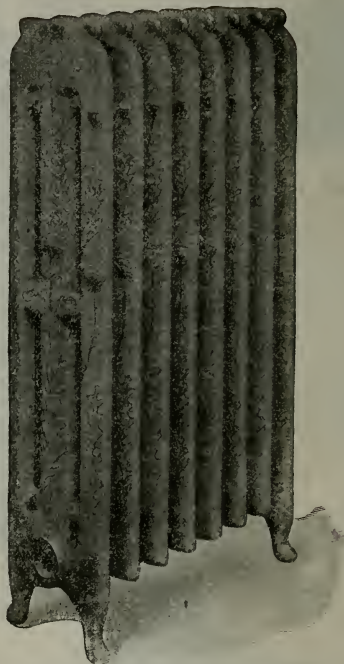
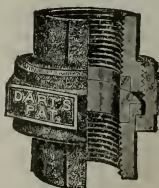
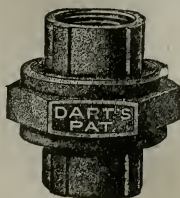


Fig. 8660. Triumph, Two Column.

NIAGARA DIRECT RADIATION

Height	inches	45	44	38	32	26	23	22	20	18	17	14	12
List prices per square foot.....		\$0.35	.35	.35	.38	.42	.44	.45	.48	.50	.51	.54	.56

BRASS TO IRON SEAT UNIONS



Size	inches	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4
Darts Union, plain.....	each	\$0.30	.30	.40	.50	.60	.80	1.20	1.60	2.00	3.20	4.80	7.20	10.80
Darts Union, galvanized.....	"	.45	.45	.60	.75	.90	1.20	1.80	2.40	3.00	4.80	7.20	10.80	16.20
Chicago Union, plain.....	"	.19	.22	.27	.40	.48	.66	.80	1.14	2.10	2.65	.....	.....	.....
Chicago Union, with galv. ends..	"	.23	.26	.34	.49	.60	.82	1.10	1.40	2.75	3.50	.....	.....	.....

CONTRACTORS' STOVES

JAP

A Low Priced Cannon Stove
Modern type, with Dump and Shaking Grate.
A satisfactory heater and a popular seller.

No.	Height, inches	Weight, lbs.	Diam. of Fire Pot, inches	List Price,
9	24	39	9	\$5.00
11	28	52	11	6.00
13	34	63	13	7.00
15	36	70	15	8.00
17	38	72	17	9.00

"MONTOUR GLOBE" CANNON

Especially Recommended for Contractors
Shanties

With Anti-Clinker, Center Discharge Grate.
For anthracite or bituminous coal.

No.	Height, inches	Weight, lbs.	Diam. of Fire Pot, inches	Price
2	41 1/4	105	13 1/8	\$15.00
3	44 3/4	161	14 3/4	19.00
4	48	193	17	23.00
5	52 1/2	283	20	27.00

Can be mounted with drum at \$4.00 extra.

SENATOR

For Hard or Soft Coal

A plain Stove of good weight. Dump and
Shaking Grate.

No.	Height Less Drum, in.	Inside Diam. of Fire Pot in.	Price
16	40	16	\$31.00
18	45	18	35.00
20	50	20	39.00

Drum, extra, \$4.00
Copper Tank, extra, \$8.00

THE "KING"

Adapted for Heating School Houses, Halls and
Factories. Heavy Weight Large Sizes

No.	Weight, lbs.	Height, ft. in.	Diam. Top Fire Chamber, in.	Price
21	185	3 9	16	\$27.00
22	250	4 3	19	29.00
23	320	4 1/2	20	33.00
24	460	4 6	22	39.00



Fig. 2. "Montour Globe"



Fig. 21. "King"

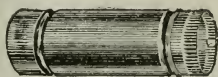
ADJUSTABLE ELBOWS

Neither Too Loose Nor Too Tight



6-inch per doz. \$2.20
Dampers each .15
Collars " .10

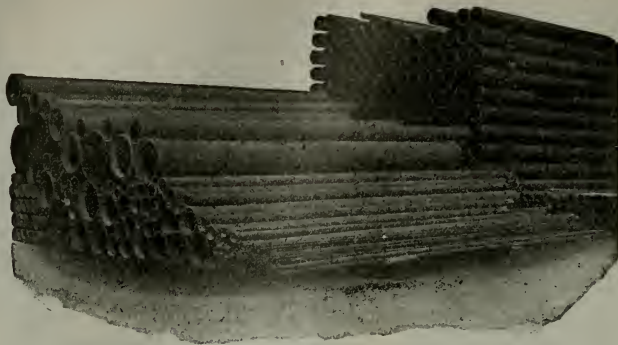
STOVE PIPE



6 inch per length \$0.12
7 inch " " .15

Can furnish galvanized at additional price.

WATER, GAS AND STEAM PIPE



PIPE

Our stock of pipe is much larger than that usually carried by jobbing houses, due to the heavy orders we receive daily and the range of sizes we are invariably called upon to ship "at once."

We are in position to take care of your requirements promptly, whether you want a single length, or earloads.

PIPE TRADE CUSTOMS

Merchant Pipe. Used to indicate the regular pipe of the market and such orders are usually filled by the shipments of soft wrought steel pipe. The weight of Merchant Pipe will usually be found to be about 5 per cent less than card weight, in sizes 7 inch to 12 inch inclusive.

Extra Strong Pipe. Designates a heavy pipe, from $\frac{1}{4}$ to 8 inches only, made of either puddled wrought iron or soft steel. Unless directed to the contrary we usually ship wrought steel pipe. Extra Strong Pipe is always shipped with plain ends and without couplings, unless we receive instructions to thread and couple, for which there is an extra charge. This term, when applied to pipe larger than 8 inch is somewhat indefinite as 9, 10 and 12 inch are made both $\frac{1}{8}$ and $\frac{1}{2}$ inch thick. Stock sizes, $\frac{1}{2}$ inch thick, and this is always furnished on open orders.

Double Extra Strong Pipe. Approximately twice as heavy as Extra Strong, and is made from $\frac{1}{2}$ to 8 inch in both wrought iron and steel. It is difficult, however, to find any quantity in "wrought iron," and our stock is usually soft wrought steel. This pipe is shipped with plain ends without couplings, unless we receive orders to thread and couple for which there is an extra charge.

SPECIAL NOTICE—Due to the large number of earloads of pipe we have on hand for immediate shipment, our prices are always as low—and sometimes lower—than it is possible to obtain elsewhere.

STANDARD BUNDLING SCHEDULE—For Ordering Pipe

NUMBER OF FEET AND AVERAGE WEIGHT OF PIPE PER BUNDLE

Size inches	Pipe			Extra Strong Pipe			Double Extra Strong Pipe		
	Pieces per Bundle	Average per Bundle		Pieces per Bundle	Average per Bundle		Pieces per Bundle	Average per Bundle	
		Feet	Weight		Feet	Weight		Feet	Weight
$\frac{1}{8}$	..	500	123	..	500	157	..	...	...
$\frac{3}{8}$	24	420	179	24	400	214	..	...	...
$\frac{1}{2}$	18	340	193	18	330	244	..	...	...
$\frac{3}{4}$	12	240	204	12	230	250	7	130	223
$\frac{7}{8}$	7	140	159	7	140	206	5	95	232
1	5	100	168	5	100	217	3	60	220
$1\frac{1}{4}$	3	60	137	3	60	180	3	60	313
$1\frac{1}{2}$	3	60	164	3	60	218	3	60	384

LIST OF MERCHANT THREADS FOR WROUGHT IRON PIPE

Size inches	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$
Price each	.05	.05	.05	.05	.05	.06	.07	.08	.10	.15	.20	.25	.45
Size inches	5	6	7	8	9	10	12	14	15	16	18	20	24
Price each	.55	.70	.85	1.00	1.25	1.50	2.50	3.50	3.50	5.00	8.00	10.00	15.00

FOR PRICES ON PIPE, SEE NEXT PAGE

STANDARD STEEL PIPE

Weights and Dimensions as Shown in All Tables are Nominal
FULL STANDARD WEIGHT—BLACK AND GALVANIZED

Size	List Price per foot	Diameter, inches		Thickness inches	Weight, lbs., per Foot		Threads per inch
		External	Internal		Plain Ends	Threads and Couplings	
1/8	\$0.05 1/2	.405	.269	.068	.244	.245	27
1/4	.06	.540	.364	.088	.424	.425	18
3/8	.06	.675	.493	.091	.567	.568	18
1/2	.08 1/2	.840	.622	.109	.850	.852	14
3/4	.11 1/2	1.050	.824	.113	1.130	1.134	14
1	.17	1.315	1.049	.133	1.678	1.684	11 1/2
1 1/4	.23	1.660	1.380	.140	2.272	2.281	11 1/2
1 1/2	.27 1/2	1.900	1.610	.145	2.717	2.731	11 1/2
2	.37	2.375	2.067	.154	3.652	3.678	11 1/2
2 1/2	.58 1/2	2.875	2.469	.203	5.793	5.819	8
3	.76 1/2	3.500	3.068	.216	7.575	7.616	8
3 1/2	.92	4.000	3.548	.226	9.109	9.202	8
4	1.09	4.500	4.026	.237	10.790	10.889	8
4 1/2	1.27	5.000	4.506	.247	12.538	12.642	8
5	1.48	5.563	5.047	.258	14.617	14.810	8
6	1.92	6.625	6.065	.280	18.974	19.185	8
7	2.38	7.625	7.023	.301	23.544	23.769	8
8	2.50	8.625	8.071	.277	24.696	25.000	8
8	2.88	8.625	7.981	.322	28.554	28.809	8
9	3.45	9.625	8.941	.342	33.907	34.188	8
10	3.20	10.750	10.192	.279	31.201	32.000	8
10	3.50	10.750	10.136	.307	34.240	35.000	8
10	4.12	10.750	10.020	.365	40.483	41.132	8
11	4.63	11.750	11.000	.375	45.557	46.247	8
12	4.50	12.750	12.090	.330	43.773	45.000	8
12	5.07	12.750	12.000	.375	49.582	50.706	8
13	5.60	14.000	13.250	.375	54.568	55.824	8
14	6.10	15.000	14.250	.375	58.573	60.375	8

Furnished with threads and couplings and in random lengths unless otherwise ordered.

EXTRA STRONG STEEL PIPE
FULL STANDARD WEIGHT—BLACK AND GALVANIZED

Size	List Price, per foot	Diameter, inches		Thickness inches	Weight per foot Plain Ends
		External	Internal		
1/8	\$0.12	.405	.215	.095	.314
1/4	.07 1/2	.540	.302	.119	.535
3/8	.07 1/2	.675	.423	.126	.738
1/2	.11	.840	.546	.147	1.087
3/4	.15	1.050	.742	.154	1.473
1	.22	1.315	.957	.179	2.171
1 1/4	.30	1.660	1.278	.191	2.996
1 1/2	.36 1/2	1.900	1.500	.200	3.631
2	.50 1/2	2.375	1.939	.218	5.022
2 1/2	.77	2.875	2.323	.276	7.661
3	1.03	3.500	2.900	.300	10.252
3 1/2	1.25	4.000	3.364	.318	12.505
4	1.50	4.500	3.826	.337	14.983
4 1/2	1.80	5.000	4.290	.355	17.611
5	2.08	5.563	4.813	.375	20.778
6	2.86	6.625	5.761	.432	28.573
7	3.81	7.625	6.625	.500	38.048
8	4.34	8.625	7.625	.500	43.388
9	4.90	9.625	8.625	.500	48.728
10	5.48	10.750	9.750	.500	54.785
11	6.10	11.750	10.750	.500	60.075
12	6.55	12.750	11.750	.500	65.415

DOUBLE EXTRA STRONG STEEL PIPE—BLACK AND GALVANIZED

Size	List Price, per foot	Diameter, inches		Thickness inches	Weight per foot Plain Ends
		External	Internal		
1/2	\$0.32	.840	.252	.294	1.714
3/4	.35	1.050	.434	.308	2.440
1	.37	1.315	.599	.358	3.659
1 1/4	.52 1/2	1.660	.896	.382	5.214
1 1/2	.65	1.900	1.100	.400	6.408
2	.91	2.375	1.503	.436	9.029
2 1/2	1.37	2.875	1.771	.552	13.695
3	1.86	3.500	2.300	.600	18.583
3 1/2	2.30	4.000	2.728	.636	22.850
4	2.76	4.500	3.152	.674	27.541
4 1/2	3.26	5.000	3.580	.710	32.530
5	3.86	5.563	4.063	.750	38.552
6	5.32	6.625	4.897	.864	53.160
7	6.35	7.625	5.875	.875	63.079
8	7.25	8.625	6.875	.875	72.424

SPIRAL RIVETED PIPE



Galvanized Pipe is furnished in any lengths up to 20 feet and is used for exhaust steam, suction pipe, paper and pulp, compressed air, etc.

Asphalted Pipe is furnished in any lengths up to 30 feet and is used for discharge pipe, dredging, hydraulic mining, pump mains, flow lines, etc.

In ordering always specify Gauge, see foot note.

PRICES WITH PLAIN ENDS, WITHOUT CONNECTIONS

Inside Diameter Inches	Thickness, U. S. Standard Gauge	Price per Foot		Approximate Weight per foot	Approximate Bursting Strength, in. lbs. per sq. in.	Inside Diameter Inches	Thickness, U. S. Standard Gauge	Price per Foot		Approximate Weight per foot	Approximate Bursting Strength, in. lbs. per sq. in.
		Asphalt, Coated	Gal- vanized					Asphalt, Coated	Gal- vanized		
3	20	\$0.354	\$0.474	1.9	1500	20	14	\$ 2.92	\$ 4.06	22.1	470
	18	.392	.527	2.3	2000		12	3.82	5.37	30.6	660
4	18	.505	.680	3.0	1500	22	10	4.68	6.59	38.3	840
	16	.520	.728	3.7	1875		8	5.65	7.94	46.2	1030
5	18	.613	.826	3.7	1200	24	6	6.62	9.28	54.1	1220
	16	.631	.882	4.5	1500		12	4.21	5.91	33.7	595
6	16	.744	1.040	5.3	1250	26	10	5.15	7.26	42.2	765
	14	.867	1.207	6.6	1560		8	6.22	8.73	50.8	940
7	12	1.150	1.614	9.2	2170	28	6	7.28	10.21	59.5	1108
	16	.870	1.216	6.2	1070		12	4.47	6.41	36.5	540
8	14	1.012	1.410	7.7	1340	30	10	5.59	7.88	45.7	705
	12	1.340	1.880	10.7	1860		8	6.75	9.48	55.2	820
9	16	.995	1.395	7.1	935	32	6	7.90	11.09	64.6	1015
	14	1.161	1.620	8.8	1170		12	4.94	6.94	39.5	505
10	12	1.542	2.166	12.3	1640	34	10	6.05	8.53	49.5	650
	16	1.116	1.564	8.0	835		8	7.30	10.27	59.8	795
11	14	1.300	1.812	9.9	1045	36	6	8.56	12.01	70.0	935
	12	1.743	2.447	13.9	1460		3	10.38	14.54	84.9	1154
12	16	1.237	1.731	8.8	750	38	10	6.32	8.90	51.7	605
	14	1.445	2.013	11.0	935		8	7.78	10.93	63.6	735
13	12	1.914	2.688	15.3	1210	40	6	9.37	13.14	76.6	870
	16	1.354	1.897	9.7	680		3	11.05	15.48	90.4	1071
14	14	1.576	2.198	12.0	850	42	10	6.94	9.78	56.8	560
	12	2.080	2.922	16.6	1200		8	8.39	11.80	68.7	685
15	16	1.477	2.067	10.6	625	44	6	9.84	13.80	80.5	810
	14	1.719	2.395	13.0	780		3	11.94	16.72	97.7	1000
16	12	2.270	3.188	18.2	1080	46	10	7.53	10.60	61.6	525
	16	1.60	2.25	11.4	575		8	9.10	12.76	74.3	645
17	14	1.86	2.59	14.1	720	48	6	10.65	14.93	87.1	760
	12	2.46	3.45	19.7	1010		3	12.94	18.11	105.8	940
18	14	2.00	2.91	15.9	670	50	10	8.00	11.25	65.4	490
	12	2.77	3.89	22.2	940		8	9.63	13.53	78.8	600
19	10	3.38	4.75	27.6	1210	52	6	11.45	16.06	93.6	715
	14	2.17	3.12	17.0	625		3	13.74	19.23	112.3	880
20	12	2.97	4.16	23.7	875	54	10	8.45	11.90	69.1	470
	10	3.62	5.10	29.6	1125		8	10.20	14.33	83.4	570
21	14	2.36	3.33	18.1	585	56	6	11.96	16.77	97.8	680
	12	3.15	4.43	25.2	820		3	14.53	20.34	118.8	830
22	10	3.85	5.42	31.5	1050	58	10	9.37	13.20	76.7	420
	14	2.63	3.66	19.9	520		8	11.29	15.87	92.4	515
23	12	3.40	4.84	27.6	730	60	6	13.27	18.60	108.5	610
	10	4.22	5.95	34.5	940		3	16.10	22.56	131.8	750

Working pressure should not be more than 25 per cent of the ultimate strength or bursting pressure.

First gauge of thickness denotes Standard Pipe; second gauge, Extra Heavy Pipe, and third gauge is Double Extra Heavy Pipe.

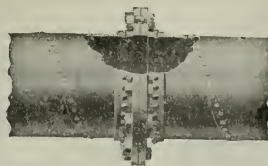
Any gauge or diameter quoted upon request.

FOR PUMPS, AIR COMPRESSORS AND ENGINES, SEE INDEX

FLANGES, BOLTS AND GASKETS

For Spiral Riveted Pipe

Flanges are Forged Steel with Spiral Pipe Standard Diameter and Drilling



Size inches	Outside Diam. inches	Thick- ness of Flange	FLANGES Price each, with Bolt Holes				DIMENSIONS OF DRILLING			Bolts per set		Gask- ets each
			Black		Galv.		Number of Bolts	Size of Bolts inches	Diam. of Bolt Circle inches	Black	Galv.	
			Flange Not At- tached	Flange Attach- ed to Pipe	Flange Not At- tached	Flange Attach- ed to Pipe						
3	6	$\frac{5}{16}$	\$0.90	\$1.75	\$1.10	\$1.90	4	$\frac{7}{16}$	4 $\frac{3}{4}$	\$0.17	\$0.23	\$0.17
4	7	$\frac{5}{16}$	1.05	2.05	1.30	2.30	8	$\frac{7}{16}$	5 $\frac{1}{8}$	.35	.45	.20
5	8	$\frac{3}{8}$	1.35	2.40	1.60	2.70	8	$\frac{7}{16}$	6 $\frac{1}{8}$	.35	.45	.25
6	9	$\frac{3}{8}$	1.60	2.75	2.00	3.15	8	$\frac{1}{2}$	7 $\frac{7}{8}$	.45	.60	.30
7	10	$\frac{3}{8}$	1.70	2.95	2.15	3.40	8	$\frac{1}{2}$	9	.45	.60	.35
8	11	$\frac{3}{8}$	2.15	3.45	2.80	4.05	8	$\frac{1}{2}$	10	.45	.60	.45
9	13	$\frac{3}{8}$	2.65	4.10	3.50	4.90	8	$\frac{1}{2}$	11 $\frac{1}{4}$	.45	.60	.60
10	14	$\frac{3}{8}$	2.95	4.50	3.95	5.45	8	$\frac{1}{2}$	12 $\frac{1}{4}$	.45	.60	.80
11	15	$\frac{7}{16}$	3.10	4.65	4.15	5.65	12	$\frac{1}{2}$	13 $\frac{3}{8}$	.65	.90	.90
12	16	$\frac{7}{16}$	3.25	4.75	4.35	5.85	12	$\frac{1}{2}$	14 $\frac{1}{4}$	.65	.90	1.00
13	17	$\frac{7}{16}$	3.60	5.15	4.85	6.25	12	$\frac{1}{2}$	15 $\frac{1}{4}$	.65	.90	1.10
14	18	$\frac{7}{16}$	3.80	5.50	5.10	6.80	12	$\frac{1}{2}$	16 $\frac{1}{4}$	.65	.90	1.20
15	19	$\frac{9}{16}$	4.75	7.75	6.35	9.35	12	$\frac{1}{2}$	17 $\frac{1}{8}$	.70	.95	1.45
16	21 $\frac{1}{4}$	$\frac{9}{16}$	6.50	8.60	9.00	11.00	12	$\frac{1}{2}$	19 $\frac{1}{4}$	.70	.95	1.70
18	23 $\frac{1}{4}$	$\frac{5}{8}$	7.90	10.30	11.00	13.35	16	$\frac{5}{8}$	21 $\frac{1}{4}$	1.30	1.95	2.10
20	25 $\frac{1}{4}$	$\frac{5}{8}$	9.30	12.50	12.75	15.85	16	$\frac{5}{8}$	23 $\frac{1}{8}$	1.30	1.95	2.40
22	28 $\frac{1}{4}$	$\frac{11}{16}$	11.60	15.95	15.90	20.25	16	$\frac{5}{8}$	26	1.30	1.95	3.35
24	30	$\frac{11}{16}$	13.00	18.00	17.70	22.70	16	$\frac{5}{8}$	27 $\frac{3}{4}$	1.30	1.95	3.80

We Furnish Threaded Companion Flanges to Match the Above Standard

FLANGED FITTINGS FOR SPIRAL RIVETED PIPE

Cast Iron—Faced and Drilled with Spiral Pipe Standard

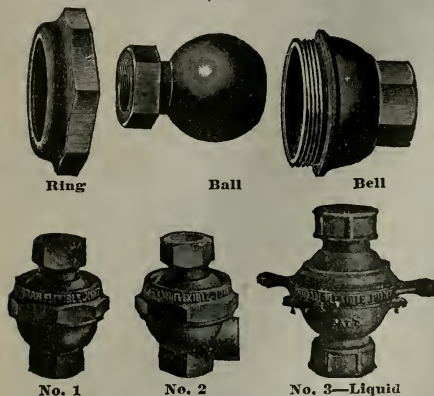
Size in.	90° Elbows		45° Elbows		Tees		Reducing Tees		Crosses		Y Branches	
	Black	Galv.	Black	Galv.	Black	Galv.	Black	Galv.	Black	Galv.	Black	Galv.
3	\$ 2.25	\$ 2.80	\$ 1.95	\$ 2.35	\$ 3.60	\$ 4.40	\$ 4.00	\$ 4.75	\$ 4.80	\$ 5.85	.....	.....
4	3.30	4.00	3.00	3.70	5.30	6.40	5.80	7.00	8.00	9.70	\$ 8.00	\$ 9.90
5	4.60	5.50	4.00	4.90	6.60	8.00	7.30	8.80	9.90	12.00	10.30	12.60
6	4.80	6.40	4.20	5.50	7.00	9.20	7.70	9.80	10.20	13.50	12.50	16.50
7	6.10	8.00	4.50	6.00	8.50	11.20	9.40	12.00	14.00	19.00	14.00	18.70
8	9.30	12.30	7.00	9.50	13.50	18.00	14.80	19.00	24.00	31.00	20.00	27.00
9	12.90	17.00	10.50	14.00	17.00	22.50	18.70	24.00	30.00	40.00	29.00	37.50
10	14.60	19.20	11.00	15.00	20.00	26.00	22.00	28.00	38.00	50.00	38.00	50.00
11	17.90	22.40	15.00	19.50	26.00	34.00	28.00	37.00	46.00	61.00	46.00	61.00
12	20.20	26.60	17.00	22.00	31.00	41.00	34.00	44.00	55.00	72.00	54.00	71.00
14	30.90	41.70	18.00	24.00	46.00	61.00	50.00	66.00	64.00	86.00	74.00	100.00
15	39.50	53.00	22.00	30.00	56.00	76.00	62.00	82.00	80.00	108.00	86.00	116.00
16	56.60	76.00	36.00	49.00	84.00	113.50	93.00	122.00	102.00	138.00	125.00	168.00
18	67.40	91.00	52.00	70.00	110.00	148.00	121.00	159.00	129.00	174.00	142.00	191.00
20	89.20	120.00	62.00	84.00	116.00	157.00	128.00	168.00	146.00	197.00	154.00	208.00
22	105.00	142.00	74.00	100.00	153.00	206.00	168.00	222.00	193.00	260.00	197.00	266.00
24	132.00	178.00	91.00	122.00	187.00	253.00	206.00	272.00	240.00	325.00	249.00	336.00

FOR PIPE CUTTERS AND THREADING MACHINES, SEE INDEX

FLEXIBLE JOINTS — PIPE CLAMPS

THE MORAN FLEXIBLE JOINT

Simple, Efficient, Durable
For Steam, Air and Gas



Only three parts—ring, ball and bell. No packing, no spring. Always reseating. Loose until pressure is applied. Special liquid joint.

Size	No. 1 & 3 Straight	Angle No. 2
1/8 inch, Standard Thread...	\$ 2.75	\$ 3.00
1/4 inch, Standard Thread...	3.00	3.25
3/8 inch, Standard Thread...	3.00	3.25
1/2 inch, Standard Thread...	3.25	3.50
3/4 inch, Standard Thread...	3.75	4.00
1 inch, Standard Thread...	4.25	4.50
1 1/4 inch, Standard Thread...	5.25	5.50
1 1/2 inch, Standard Thread...	6.00	6.25
2 inch, Standard Thread...	7.50	8.75
2 1/2 inch, Standard Thread...	9.00	10.50
3 inch, Standard Thread...	11.25	12.25
3 1/2 inch, Standard Thread...	14.00	15.50
4 inch, Standard Thread...	15.00	16.75
4 1/2 inch, Standard Thread...	18.75	20.75
5 inch, Standard Thread...	18.75	20.75
6 inch, Standard Thread...	25.00	27.50
7 inch, Threaded or Flanged	50.00	55.00
8 inch, Threaded or Flanged	75.00	82.50
9 inch, Threaded or Flanged	95.00	104.50
10 inch, Threaded or Flanged	115.00	126.50

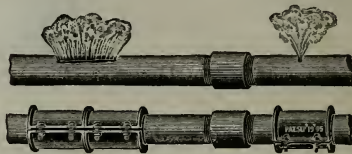
Larger sizes furnished for either hub and spigot Flanged or Threaded Connections. In ordering, please state whether steam, air or liquid is to be conveyed, and under what pressure.

Prices given for same on application.

EMERGENCY PIPE CLAMP

MALLEABLE IRON

Complete with Packing Ready for Use

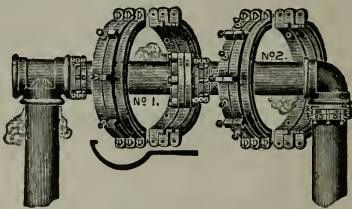


To Repair Splits and Rust Holes in Pipes

This is the most convenient and practical repair ever placed on the market for splits and rust holes in pipe; it is so simple that any one with a small wrench can attach it in a few minutes.

Size of Pipe..in.	1/2	3/4	1	1 1/4	1 1/2	2
Lgth. over all, in.	3 1/4	3 3/4	3 1/2	3 3/4	4	4 1/4
Each	\$.40	.45	.50	.60	.70	.80
Size of Pipe..in.	2 1/2	3	3 1/2	4	4 1/2	5
Lgth. over all, in.	4 1/2	5	5 1/2	6	6 1/2	7
Each	1.00	1.25	1.50	2.00	4.50	5.00
Size of Pipe..in.	6	7	8	9	10	12
Lgth. over all, in.	8	9	9 1/2	10	11	12
Each	6.00	7.00	8.00	9.00	10.00	12.00

CLIMAX STEAM JOINT CLAMP



A Permanent Repair for Pipe Joints. Made of Brass for all Sizes of Pipe

No. 1 Clamps for all sizes 6 inches and smaller.
No. 2 Clamps for all sizes 7 inches and larger.

Size Pipe In- side Dia. in.	1/2	3/4	1	1 1/4	1 1/2	2
Each	1.50	1.50	1.50	1.90	2.25	3.00
Size Pipe In- side Dia. in.	2 1/2	3	3 1/2	4	4 1/2	5
Each	3.75	4.50	5.25	6.00	6.75	7.50
Size Pipe In- side Dia. in.	6	7	8	9	10	12
Each	9.00	10.50	13.00	15.75	18.75	22.50

EXPANSION PIPE HANGERS

With Sectional and Solid Ring



Style J
For 8 Inch and
Larger Pipe



Style R
For 8 Inch and
Smaller Pipe



Style T
For 8 Inch and
Smaller Pipe



Style S
For 6 Inch and
Smaller Pipe



Style T
For 9 Inch and
Larger Pipe



Style SS
For 8 Inch and
Smaller Pipe



Expansion Pipe
Hanger. With
Solid Ring for
8 inch and
Smaller Pipe

PRICE LIST STYLE J HANGER

Size	inches	8	9	10	12
Price	each	5.00	5.50	6.00	7.00

Prices do not include turnbuckles on styles T or J.

PRICE LIST STYLE T HANGER

Size	inches	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2
Price	each	.90	1.00	1.10	1.25	1.50	1.75	2.00	2.25	2.50
Size	inches	5	6	7	8	9	10	12	14	...
Price	each	3.00	3.50	4.00	5.00	14.00	15.00	17.00	20.00	...

Style T for 8 inch and smaller pipe can also be furnished with lag screw or ceiling plate similar to styles R and S.

PRICE LIST STYLES R AND S HANGERS

Size	inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price	each	.32	.33	.35	.45	.55	.65	.80
Size of pipe, rings and buttons are tapped for	inches	1/2	3/4	1	1 1/4	1 1/2	2	3
Size	inches	3 1/2	4	4 1/2	5	6	7	8
Price	each	1.00	1.15	1.60	2.00	2.50	3.00	3.75
Size of pipe, rings and buttons are tapped for	inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3

Pipe can be run and supported upon temporary wood hangers, and when in proper line these sectional hangers can be conveniently applied.

PRICE LIST STYLE SS WITH BEAM CLAMP

Size	inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price	each	1.00	1.00	1.05	1.15	1.25	1.35	1.50
Size of pipe, rings and buttons are tapped for	inches	1/2	3/4	1	1 1/4	1 1/2	2	3
Size	inches	3 1/2	4	4 1/2	5	6	7	8
Price	each	1.70	1.85	3.35	3.75	4.25	4.75	5.50
Size of pipe, rings and buttons are tapped for	inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3

List price of beam clamp only, up to 4 1/2 inch, \$0.75 each; 5 to 8 inch, \$1.75 each; 9 to 14 inch, \$3.75 each; 15 to 24 inch, \$6.00 each.

EXPANSION PIPE HANGERS

With Solid Ring

Size	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price, complete	each	.17	.17	.18	.19	.25	.29	.36	.44
Size of pipe, rings and buttons are tapped for	inches	1/4	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Size	inches	3 1/2	4	4 1/2	5	6	7	8	...
Price, complete	each	.55	.63	.90	1.12	1.35	1.80	2.25	...
Size of pipe, rings and buttons are tapped for	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3

PARTS OF SOLID RING EXPANSION PIPE HANGERS

Size	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price, plates	each	.08	.08	.08	.08	.09	.09	.10	.10
Price, buttons	each	.06	.06	.06	.06	.07	.07	.08	.08
Price, rings	each	.08	.08	.12	.15	.20	.25	.30	.40
Size	inches	3 1/2	4	4 1/2	5	6	7	8	...
Price, plates	each	.10	.10	.10	.10	.10	.10	.10	...
Price, buttons	each	.08	.08	.08	.08	.08	.08	.08	...
Price, rings	each	.60	.60	.80	1.00	1.25	1.70	2.15	...

Prices do not include such parts as expansion pipe, rod or turnbuckles; these will be at an extra price and furnished only when so specified. If expansion pipe or rod is desired, state distance from center of pipe to support.

FLOOR AND CEILING PLATES

Fig. 3
Ceiling PlateFig. 6
Floor PlateFig. 10
Perfection

Cold Rolled Steel Hinged, Floor and Ceiling Plate

Price List Nos. 3, 6 and 10—Nickel Plated									
Size	inches	1/4	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price	each	\$.27	.28	.32	.35	.38	.45	.65	.80

Larger sizes, prices on application.

HOOK PLATES, BEAM HOOKS AND COIL STANDS



Fig. 158. Hook Plates

Number of Hooks	1	2	3	4	5	6
For 1 in. pipe, 2 1/2 ins. between centers.....each	.09	.18	.23	.26	.32	.38
For 1 1/2 in. pipe, 3 ins. between centers.....each	.10	.21	.27	.32	.41	.52
For 1 1/2 in. pipe, 3 1/2 ins. between centers.....each	.15	.28	.43	.58	.72	.88
For 2 in. pipe, 4 1/2 ins. between centers.....each	.22	.43	.65	.90	1.15	1.35

BRANCH TEES

Branches R. H.

Run Open
R. H.Run Open
R. H.

Fig. 1

Branches R. H.

Branches L. H.

Inlet Open
R. H.

Closed

Closed



Closed

Fig. 2

Outlet Open R. H.

Fig. 3

Inlet Open R. H.

The run and back opening of Branch Tees are tapped the same size as branches, unless otherwise ordered. Always order Branch Tees by size and number.

No. of Branches	1 in. Branch Tees			1 1/4 in. Branch Tees			1 1/2 in. Branch Tees			2 in. Branch Tees		
	2 1/2 in. Center to Center			3 in. Center to Center			3 1/2 in. Center to Center			4 1/2 in. Center to Center		
	1 in. or 1 1/4 in. Run	1 1/2 in. Run	2 in. Run	1 1/4 in. or 1 1/2 in. Run	2 in. Run	2 1/2 in. Run	1 1/2 in. or 2 in. Run	2 1/2 in. Run	3 in. Run	2 in. Run	2 1/2 in. or 3 in. Run	3 1/2 in. Run
2	\$.90	1.00	1.15	1.65	1.90	2.40	2.70	3.45	3.80	5.25	5.75	6.25
3	1.05	1.15	1.35	2.00	2.40	2.85	3.35	4.15	4.60	6.40	7.00	7.75
4	1.15	1.30	1.60	2.40	2.90	3.55	4.00	5.00	5.50	7.65	8.50	9.25
5	1.35	1.45	1.85	2.80	3.30	3.95	4.65	5.75	6.25	8.80	9.75	10.75
6	1.60	1.75	2.10	3.20	3.90	4.20	5.25	6.50	7.25	10.60	11.75	13.00
7	1.90	2.20	2.45	3.60	4.50	4.95	5.85	7.00	7.75	11.50	12.75	14.00
8	2.20	2.45	2.75	4.00	5.25	6.15	6.50	8.25	9.00	12.25	13.50	15.00
9	2.65	2.90	3.40	4.80	5.85	6.85	7.60	9.25	10.00	13.50	15.00	16.50
10		3.30	4.00	5.00	6.25	7.25	8.00	9.75	10.75			
11		4.50	4.80	5.25	6.50	7.65	8.50	10.50	11.50			
12		4.75	5.10	6.00	7.00	8.25						
13		5.50	6.00	6.75	7.75	9.00						
14		7.00	7.25	7.50	8.50	9.75						
15		7.50	7.75	8.00	9.00	10.25						
16		8.00	8.25	8.50	9.50	10.75						

Back or Side Outlets Charged as Additional Front Outlets

1 inch Branch Tees, 1 inch or 1 1/4 inch run are 1 1/4 inches inside diameter. 1 inch Branch Tees, 1 1/2 inch or 2 inch run, are 2 1/4 inches inside diameter.
 1 1/4 inch Branch Tees are all 2 1/2 inches inside diameter.
 1 1/2 inch Branch Tees are all 2 3/4 inches inside diameter.
 2 inch Branch Tees are all 3 1/2 inches inside diameter.

JENKINS VALVES



Screwed, Fig. 106



Screwed, Fig. 108



Screwed, Fig. 110



Screwed, Fig. 128

BRASS GLOBE VALVES
Standard Pattern

Suitable for 150 lbs. working steam pressure, or 250 lbs. working water pressure.

Screwed, No. 106	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
	1.10	1.10	1.25	1.60	2.20	2.80	4.00	5.50	8.75	15.75	22.00

BRASS ANGLE VALVES
Standard Pattern

Suitable for 150 lbs. working steam pressure, or 250 lbs. working water pressure.

Screwed, No. 108	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
	1.10	1.10	1.25	1.60	2.20	2.80	4.00	5.50	8.75	15.75	22.00

BRASS CROSS VALVES
Standard Pattern

Suitable for 150 lbs. working steam pressure, or 250 lbs. working water pressure.

Screwed, No. 110	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
	1.70	2.00	2.25	2.50	3.25	4.75	6.25	9.50	20.00	27.50

BRASS GLOBE VALVES
Extra Heavy Pattern

Suitable for 300 lbs. working steam pressure, or 500 lbs. working water pressure.

Screwed, No. 128	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
	3.00	3.50	4.00	5.00	6.50	8.25	11.00	16.00	33.00	45.00

JENKINS CHECK VALVES

Fig. 117-s
Sectional View
of Standard Pattern
Horizontal
Brass Check ValvesHorizontal, Screwed
Fig. 117Angle, Screwed
Fig. 118Vertical, Screwed
Fig. 119

Screwed, Fig. 352

BRASS CHECK VALVES
Standard Pattern

Horizontal, Angle and Vertical

Horizontal No. 117, Angle No. 118, or Vertical No. 119, Screwed

Suitable for 150 lbs. working pressure.

Size	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
	1.10	1.10	1.20	1.30	1.90	2.60	3.60	5.00	7.50	14.00	21.00

BRASS SWING CHECK VALVES
Standard Pattern
No. 352

Suitable for 150 lbs. working pressure.

Size	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
	1.20	1.30	1.90	2.60	3.60	5.50	7.50	14.00	21.00

JENKINS VALVES



Screwed, Fig. 325



Screwed, Fig. 370



Flanged, Fig. 326

STANDARD GATE VALVES

Iron Body, Composition Mounted, Inside Screw, Stationary Spindle

Fig. 325 Screwed. Fig. 326 Flanged

2 to 16 inch, suitable for 125 lbs. Steam Pressure; 175 lbs. Water
18 to 30 inch, suitable for 100 lbs. Steam Pressure; 125 lbs. Water

Sizes	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Screwed	\$10.00	11.50	14.00	17.00	19.00	24.00	27.50	32.50	45.00	54.00	76.00	90.00	125.00
Flanged	12.00	13.50	16.50	19.50	23.00	28.00	31.50	36.50	49.00	58.00	81.00	95.00	133.00

Sizes	14	15	16	18	20	22	24	26	28	30
Flanged	\$181.00	220.00	260.00	350.00	425.00	530.00	600.00	800.00	950.00	1,100.00

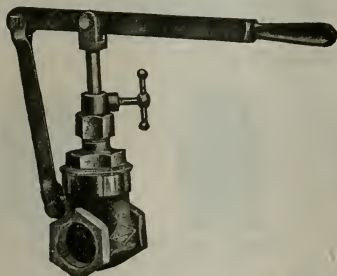
BRASS GATE VALVES

Standard Pattern, Stationary Spindle, Inside Screw

Fig. 370

Suitable for 125 Pounds Working Steam Pressure, or 175 Pounds Working Water Pressure.

Sizes	¾	¾	1	1½	1½	2	2½	3		
Price	\$1.45	1.45	1.65	2.05	2.80	3.70	5.00	7.30	13.00	19.00



Screwed, Fig. 376

BRASS GATE VALVES

Standard Pattern, with Sliding Stem and Lever Quick Opening

Suitable for 125 Pounds Working Steam Pressure or 175 Pounds Working Water Pressure.

Screwed, Fig. 378

Sizes	½	¾	1	1¼	1½	2	2½	3
Price	\$3.50	3.60	4.80	6.20	8.50	11.80	20.25	30.00

Flanged, Fig. 377

Sizes	1	1¼	1½	2	2½	3
Price	\$12.50	14.50	18.50	29.50	40.00	50.00



Fig. 210

BALL GAUGE-COCK

With Jenkins Bros. Composition Plug

This Gauge-Cock is very simple and durable, and as a Jenkins Bros. Composition Plug is used to make the seat, it will remain tight for long periods. Should the plug become worn by use and the joint leak, it may be easily made tight by truing up the end of the plug with a fine file or sandpaper. This will shorten the plug slightly, and the long screw at the end of ball should then be turned in until the ball stands in a horizontal position. With ordinary use the plug will last several years, and can be renewed very cheaply.

Sizes	½	¾
Fig. 210	\$1.50	\$1.50

JENKINS VALVES

Standard Patterns, with Yoke, Iron Body, Composition Mounted



Screwed, Fig. 141



Flanged, Fig. 142



Screwed, Fig. 143



Screwed, Fig. 145

Fig. 141 GLOBE VALVES, WITH YOKE

Suitable for 150 lbs. working steam pressure, or 250 lbs. working water pressure.

Size, inches.....	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	16	18	20	24
Screwed, No. 141.....	10.00	12.00	16.75	19.50	24.00	32.00	40.00	48.00	80.00	90.00	121.00	130.00	155.00					
Flanged, No. 142.....	11.75	14.00	18.50	21.50	26.00	34.00	42.00	50.00	80.00	90.00	121.00	130.00	155.00	185.00	334.00	400.00	540.00	1,260.00

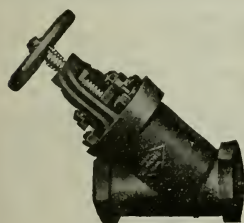
Fig. 143 ANGLE VALVES, WITH YOKE

Size, inches.....	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	16	18	20	24
Screwed, No. 143.....	10.00	12.00	16.75	19.50	24.00	32.00	40.00	48.00	80.00	90.00	121.00	130.00	155.00					
Flanged, No. 144.....	11.75	14.00	18.50	21.50	26.00	34.00	42.00	50.00	80.00	90.00	121.00	130.00	155.00	185.00	334.00	400.00	540.00	1,260.00

Fig. 145 CROSS VALVES, WITH YOKE

Size, inches.....	2½	3	3½	4	4½	5	6	7	8
Screwed, No. 145.....	16.00	21.00	26.00	30.00	42.00	45.00	58.00	90.00	100.00
Flanged, No. 146.....	19.00	24.00	29.00	33.00	45.00	48.00	62.00	90.00	100.00

* Not Illustrated.



Screwed, Fig. 296



Fig. 151

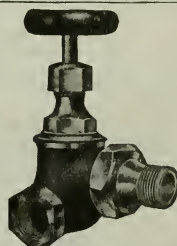


Fig. 152

Horizontal, Screwed, Fig. 151

Angle, Screwed, Fig. 152

Vertical, Screwed, Fig. 152a



Right Hand, with Male Union
Fig. 180

Y OR BLOW-OFF VALVES

Standard Pattern, with Yoke, Iron Body, Composition Mounted with Renewable Seat Rings

Suitable for 150 lbs. working steam pressure, or 250 lbs. working water pressure.

Sizes.....	2	2½	3
Fig. 296.....	11.00	15.00	20.00

IRON BODY CHECK VALVES—Standard Pattern

Horizontal, Angle or Vertical, Screwed. Figs. 151, 152 and 152a

Suitable for 150 lbs. working pressure.

Sizes.....	2	2½	3	3½	4	4½	5	6	7	8
List Price.....	8.00	11.00	14.00	17.00	20.00	25.00	30.00	40.00	65.00	80.00

No. 180 CORNER VALVES

Offset Pattern, with Wood Wheels

With Male or Female Unions, Right or Left Hand Outlet

No.	Sizes.....	¾	1	1½	2
6	Rough body, finished trimmings.....	3.05	3.85	4.75	6.45
7	Finished all over.....	3.50	4.40	5.30	7.05
8	Rough body, nickel plated trimmings.....	3.35	4.15	5.05	6.85
9	Rough body, nickel plated all over.....	3.45	4.25	5.15	6.95
10	Finished and nickel plated all over.....	3.90	4.80	5.70	7.45

Please state whether RIGHT or LEFT HAND Valves are required, and specify Style or Finish by NUMBER.

JENKINS VALVES



Angle, Fig. 114



Screwed, Fig. 124



Angle, Male Union, Fig. 168

BRASS HOSE GLOBE AND ANGLE VALVES

Threaded on Outlet for Hose Connection

Suitable for 250 Pounds Working Water Pressure

Screwed Inlet, with Cap and Chain, Angle, Fig. 114, or Globe, Fig. 114A (not illustrated)

Sizes	¾	1	1¼	1½	2	2½	3
Rough Body, Finished Trimmings							
Plain, with iron wheel.....	\$4.00	\$5.00	\$7.00	\$ 9.50	\$15.00	\$22.00	\$30.00
Plain, with brass wheel.....	4.65	5.75	7.80	10.50	16.50	24.80	32.80
N. P., with brass wheel.....	5.05	6.15	8.20	10.90	16.90	25.40	33.40
Finished All Over							
Plain, with brass wheel.....	5.50	6.50	8.70	11.70	16.80	27.50	36.50
N. P., with brass wheel.....	5.90	6.90	9.00	12.00	17.20	28.00	37.50

BRASS Y OR BLOW-OFF VALVES

Standard Pattern With Renewable Seat Rings

Suitable for 150 Pounds Working Steam Pressure, or 250 Pounds Working Water Pressure.

Fig. 124

Sizes	¾	½	¾	1	1¼	1½	2	2½	3
Prices	\$2.00	\$2.00	\$3.00	\$4.00	\$5.00	\$6.50	\$9.25	\$18.00	\$25.00

RADIATOR VALVES

Globe or Angle, with Wood Wheels. With Male or Female Unions

For Convenience, Please Specify Style or Finish by NUMBER

Fig. 168

No.	Sizes	¾	½	¾	1	1¼	1½	2
6	Rough body, finished trimmings.....	\$2.60	\$2.75	\$3.50	\$4.30	\$5.85	\$7.75	\$12.60
7	Finished all over.....	3.00	3.20	4.00	4.80	6.40	8.75	13.85
8	Rough body, nickel plated trimmings.....	2.90	3.05	3.80	4.60	6.15	8.05	12.90
9	Rough body, nickel plated all over.....	3.00	3.15	3.90	4.70	6.25	8.15	13.00
10	Finished and nickel plated all over.....	3.45	3.60	4.40	5.20	6.80	9.15	14.25



Fig. 139

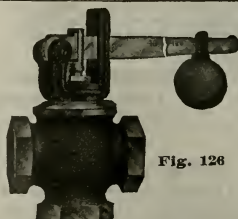


Fig. 126



Fig. 137

GLOBE AND ANGLE VALVES

Iron Body, with Brass Hub

Suitable for 125 Pounds Working Steam Pressure, or 175 Pounds Working Water Pressure.

Globe, Fig. 137, or Angle, Fig. 139, Screwed

Sizes	½	¾	1	1¼	1½	2	2½	3
Prices	\$2.80	\$2.80	\$3.00	\$4.00	\$5.00	\$7.25	\$11.00	\$16.00

BRASS SAFETY VALVES

Regular Cross or Angle Pattern

Suitable for Pressures 40 to 125 Pounds.

Cross Pattern, Screwed, Fig. 126; Angle Pattern, Screwed, Fig. 126A (Not illustrated)

Sizes	¾	¾	1	1¼	1½	2
Prices	\$4.00	\$5.00	\$6.00	\$9.00	\$11.00	\$16.00

JENKINS GAUGE COCKS, AIR VALVES, ETC.



Fig. 208. With Cleaner



Fig. 209. Without Cleaner

PATENT GAUGE COCKS

With Jenkins Bros. Discs

Sizes	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
No. 208.....	\$1.50	\$1.60	\$1.75

Sizes	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
No. 209.....	\$1.00	\$1.10	\$1.30

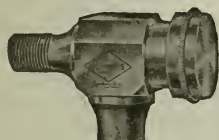


Fig. 190



Fig. 191

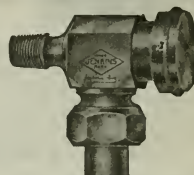


Fig. 193

JENKINS IMPROVED AUTOMATIC AIR VALVES

No. 190 shows the air valve in its simplest form. The drip cup, No. 191, is generally used in connection therewith, and is screwed to the outlet end of the valve. This will receive any water of condensation which may pass through the valve, and allow it to evaporate.

Price per doz., Finished and Nickel Plated

No. 190. $\frac{1}{8}$ inch	\$7.50
No. 190. $\frac{1}{4}$ inch	7.50
No. 191. Drip cup	2.00

Fig. 193 With Union Drip Connection

No. 193 illustrates the air valve fitted with union, designed for connection to a drip pipe. By connecting the union outlet to a drip pipe the air valves may be set so as to permit a slight circulation of steam at all times through them, the drip pipe carrying off all condensation which may escape thereby.

Price per doz., Finished and Nickel Plated

No. 193. $\frac{1}{8}$ inlet, $\frac{1}{4}$ union.....	\$ 9.50
No. 193. $\frac{1}{2}$ inlet, $\frac{1}{4}$ union.....	10.00
No. 193. $\frac{3}{4}$ inlet, $\frac{1}{4}$ union.....	10.00

All of the Jenkins Improved Automatic Air Valves are capable of being easily repaired if necessary. This can be done without removing the valve from the radiator by simply replacing the plug and screw.

Price of Plug and Screw

No. 192. Parts B and C.....	each \$0.25
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WOOD VALVE WHEELS



Fig. 187

Wood Wheels, Top and Bottom Plates, and Nuts

Sizes	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2
Wood Wheel.....	\$0.05	.05	.05	.05	.06	.06	.08	.08
Top Plate.....	.04	.04	.04	.04	.05	.05	.05	.05
Bottom Plate.....	.10	.10	.10	.10	.12	.12	.13	.16
Nut .....	.03	.03	.03	.03	.03	.03	.06	.06
Complete	\$0.22	.22	.22	.22	.26	.26	.30	.35

WIRE VALVE WHEELS

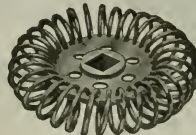


Fig. 189

Sizes of Valves	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$
Outside Dia. of Wheel..	1 $\frac{1}{2}$	2	2	2 $\frac{3}{4}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$
Price each.....	\$0.12	.12	.12	.12	.14	.16	.20

Sizes of Valves	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$
Outside Dia. of Wheel..	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5 $\frac{1}{4}$	5 $\frac{1}{4}$	6 $\frac{3}{4}$	7 $\frac{1}{2}$
Price each.....	\$0.25	.30	.65	.90	1.10	1.30	1.60



Fig. 04

FAIRBANKS' RENEWABLE BRONZE GLOBE AND ANGLE VALVES

Renewable vulcabeston ring disc, Follower gland. 300 pounds hydraulic test pressure, 150 pounds steam working pressure, 175 pounds water working pressure.

These valves embody the best up-to-date renewable features.

They have a raised round seat upon which scale, grit or other sediment is not liable to lodge.

The seat is preserved from injury by the use of a comparatively soft ring in the renewable disc.

Sizes $\frac{3}{8}$ inch and under are not made with follower gland.



Fig. 0805

Fig. 04

Size	inches	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Fig. 01, Globe Valve, screw end	1.10	1.10	1.25	1.60	2.20	2.80	4.00	5.50	8.75	15.75	22.00	
Fig. 03, Angle Valve, screw end												
Fig. 02, Globe Valve, flange end				4.00	5.00	6.00	9.00	11.00	16.50	25.00	34.00	
Fig. 04, Angle Valve, flange end				2.25	2.50	3.25	4.75	6.25	9.50	20.00	30.00	
Fig. 055, Cross Valve, screw end												

Fig. 0805 FAIRBANKS' VULCANIZED ASBESTOS PACKED IRON COCKS

PRESSURES

Standard Weight—300 lbs. Hyd. Test Pressure. 125 lbs. Steam working Pressure. 150 lbs. Water Working Pressure.

Heavy Weight—450 lbs. Hyd. Test Pressure. 175 lbs. Steam working Pressure. 225 lbs. Water Working Pressure.

Extra Heavy Weight—600 lbs. Hyd. Test Pressure. 250 lbs. Steam Working Pressure. 350 lbs. Water Working Pressure. A ring of this special asbestos called Vulcabeston is used on the shoulder of the plug for top packing.

Size	inches	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6
Fig. 0805, screw end	1.30	1.30	1.45	1.60	2.10	2.50	3.50	4.75	7.00	....	....	....	....	....	....	....
Fig. 0807, flange end						2.50	3.50	4.75	7.00	....	....	....	....	....	....	....
Fig. 0809, screw end						....	....	....	....	12.00	18.00	27.00	30.00	45.00	60.00	....
Fig. 0808, flange end						....	....	....	....	....	....	....	....	....	....	....
Fig. 0809, heavy, screw end		1.50	1.75	2.00	2.50	3.00	4.25	5.75	8.50	....	....	....	....	....	....	....
Fig. 0811, heavy, flange end		....	....	....	....	3.00	4.25	5.75	8.50	....	....	....	....	....	....	....
Fig. 0810, heavy, screw end		....	....	....	....	....	....	....	....	14.50	21.50	32.50	36.00	....	....	....
Fig. 0812, heavy, flange end		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fig. 0813, Ex. heavy, screw end		....	....	....	2.40	3.00	3.50	5.00	6.75	10.00	....	....	....	....	....	....
Fig. 0815, Ex. heavy, flange end		....	....	....	....	....	3.50	5.00	6.75	10.00	....	....	....	....	....	....
Fig. 0814, Ex. heavy, screw end		....	....	....	....	....	....	....	....	....	17.00	26.00	38.00	42.00	....	....
Fig. 0816, Ex. heavy, flange end		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Prices of Bronze Cocks Furnished on Request

THE EVERLASTING VALVE

The Everlasting Valve is composed of a top and bottom bonnet, disc, lever and post. The disc rotates over the valve seat, constantly refacing it. The Everlasting Valve is of extra heavy construction, self-cleaning, self-grinding; has no stuffing box and therefore requires no packing or repacking. Every valve is tested for 250 lbs. live steam pressure before leaving the factory. The Everlasting Valve is covered with our two years' drop tight guarantee. We agree to repair, replace or refund the money if any of the valves fail.

"EVERLASTING" BLOW-OFF

VALVE

Price List

Type	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	4	5	6
Iron body, screwed	7.00	10.00	10.00	10.00	17.50	20.00	25.00	30.00	45.00	70.00	100.00	120.00
Iron body, flanged	15.00	15.00	....	20.00	24.00	29.00	35.00	52.00	78.00	110.00	135.00
Iron body, screwed-angled	19.00	22.00	27.50	33.00	....	....	....	....
Iron body, flanged-angled	25.00	31.00	38.00	56.00	....	....	....
Iron body, screwed, rack and pinion	33.00	38.00	55.00	70.00	100.00	120.00
Iron body, flanged, rack and pinion	37.00	43.00	62.00	78.00	110.00	135.00
Semi-brass, screwed	12.00	12.50	21.00	27.50	35.00	50.00	64.00	64.00	110.00	150.00	200.00
Semi-brass, flanged	8.50	20.00	20.00	28.00	35.00	45.00	55.00	80.00	80.00	135.00	170.00	225.00
Semi-brass, flanged-angled	39.00	50.00	61.00	88.00	....	....	....	....
Semi-brass, screwed, rack and pinion	43.00	58.00	74.00	110.00	150.00	200.00
Semi-brass, flanged, rack and pinion	53.00	68.00	90.00	130.00	170.00	225.00
Brass, screwed	10.00	14.00	15.00	25.00	....	....	55.00	60.00	80.00	130.00	200.00	300.00
Brass, flanged	25.00	25.00	35.00	45.00	62.00	79.00	100.00	100.00	170.00	225.00	325.00
Brass, flanged-angled	50.00	67.00	85.00	....	....	....	....
Brass, screwed, rack and pinion	53.00	68.00	90.00	130.00	200.00	300.00
Brass, flanged, rack and pinion	70.00	87.00	110.00	170.00	225.00	325.00

Fig. 1912

Fig. 1912A



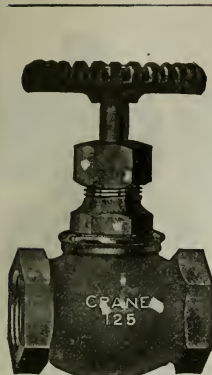


Fig. 1 Globe



Fig. 2 Angle



Fig. 440

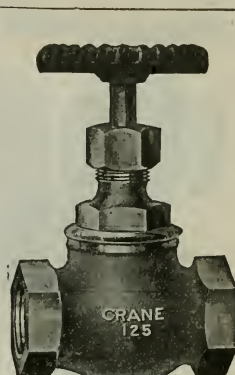


Fig. 12

STANDARD BRASS GLOBE, ANGLE AND CROSS VALVES FOR STEAM WORKING PRESSURES AS FOLLOWS

Sizes 3 inch and Smaller, up to 125 Pounds Sizes 3½ inch and 4 inch, up to 100 Pounds

Size	inches	¾	¾	¾	1	1½	2
No. 1, Globe	each	\$0.72	.72	.77	1.00	1.26	1.80
No. 2, Angle	each	.72	.72	.77	1.00	1.26	1.80
No. 18, Cross, not illustrated	each	1.25	1.25	1.50	2.00	2.50	3.50
Size	inches	1½	2	2½	3	3½	4
No. 1, Globe	each	3.50	5.30	10.00	14.40	26.50	36.00
No. 2, Angle	each	3.50	5.30	10.00	14.40	26.50	36.00
No. 18, Cross, not illustrated	each	5.00	8.00	16.00	24.00	...	...

Fig. 440. STANDARD STRAIGHT-WAY OR GATE VALVES BRASS. BRASS SEATS. DOUBLE GATE.

For Steam Working Pressures, sizes to 3 inch, 125 pounds; larger, 100 pounds.

Size	inches	¾	¾	¾	1	1½	2	2½	3	3½	4	5	6
No. 440, Screwed ..	ea	\$1.45	1.45	1.65	2.05	2.80	3.70	5.00	7.30	13.00	19.00	43.00	68.00
No. 441, Flanged ..	ea	...	...	...	...	...	...	25.00	33.00	39.00	68.00	83.00	135.00
												110.00	165.00
												180.00	190.00

FIG. 12. CRANE JENKINS DISC GLOBE AND ANGLE VALVES BRASS

With Non-Heating Wheel. For Steam Working Pressures up to 125 Pounds

Size	inches	¾	¾	¾	1	1½	1½	2	2½	3
No. 12, Screwed	each	\$1.10	1.25	1.60	2.20	2.80	4.00	5.50	8.75	15.75
No. 13, Flanged	each	...	...	...	5.00	6.00	9.00	11.00	16.50	25.00
Diam. Flanges	inches	...	...	...	3½	4	4½	5	6	7

These Valves may be packed while under pressure; to do so, have Valve wide open.



Fig. 20

STANDARD BRASS HORIZONTAL CHECK VALVES

FOR STEAM WORKING PRESSURES
Sizes 3 inch and Smaller, up to 125 Pounds
Sizes 3½ inch and 4 inch, up to 100 Pounds

Size	inches	¾	¾	¾	1	1½	2
No. 20, Screwed	each	\$0.65	.65	.70	.90	1.15	1.60
No. 21, Flanged	each	...	...	...	...	4.90	6.50
Diameter of Flanges	inches	...	...	...	...	3½	4
Size	inches	1½	2	2½	3	3½	4
No. 20, Screwed	each	\$3.15	4.75	9.00	13.00	24.00	32.50
No. 21, Flanged	each	10.15	15.50	22.00	33.50	47.50	66.50
Diameter of Flanges	inches	5	6	7	7½	8½	9

STANDARD STEAM COCKS

Brass

Fig. 250.
Square Head

Size	inches	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Nos. 250 and 252.....each		.85	1.00	1.25	1.70
No. 254, square head with check, each				1.40	1.90
Size	inches	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Nos. 250 and 252.....each		2.35	3.70	4.85	7.30
No. 254, square head with check, each		2.55	3.95	5.15	7.65
Size	inches	$2\frac{1}{2}$	3	$3\frac{1}{2}$ *	4*
Nos. 250 and 252.....each		14.50	22.50	38.50	50.00
No. 254, square head with check, each					

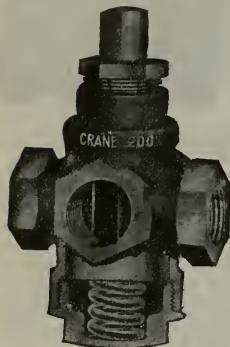
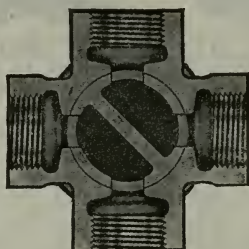
Fig. 252.
Flat Head

Fig. 267. Screwed

Screwed
Fig. 320. All Iron Cocks

MEDIUM BALANCE FOUR WAY COCKS

Gland Packed

Brass body and plug. Nickel plated steel spring. For steam working pressures up to 200 pounds. For cold water working pressures up to 275 pounds. The spring automatically takes up wear.

Fig. 267

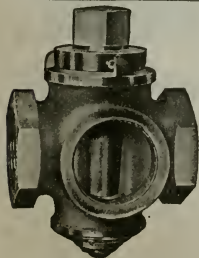
Size	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price, screwed	each	8.00	11.50	15.00	23.00	30.00	42.00

STANDARD IRON COCKS

For Working Pressures up to 125 Pounds.

Fig. 320

Size	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
Price	each	.90	1.05	1.30	1.60	1.95	2.70	4.40
Size	inches	3	$3\frac{1}{2}$	4	5	6	8	
Price	each	6.75	12.00	15.50	32.00	45.00	100.00	

Fig. 268. Square Head
Three Way

THREE WAY STEAM COCKS

Brass, with Check

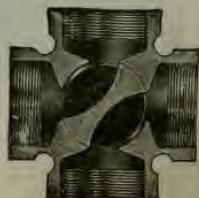
With extra large plug and full openings.

No. 268

Size ..	inches	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Price ...each		1.80	2.10	2.50	3.00	3.75	5.75	7.15	11.00	18.75	26.00

FOUR WAY BRASS STEAM COCKS

These Cocks are made to order only.
Prices on application.

Fig. 269. Square Head
Four Way

CHECK—THROTTLE—HOSE VALVES



Fig. 44



Fig. 24



Fig. 26



Fig. 50

Nos. 24-26 STANDARD CHECK VALVES

BRASS

For Steam Working Pressures up to 125 Pound

Size	inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price, No. 24 Vertical.....each		\$0.72	.77	1.00	1.26	1.80	2.52	3.50
Price, No. 26 Angle.....each		.72	.77	1.00	1.26	1.80	2.52	3.50

No. 44 STANDARD BUTTERFLY VALVES

For Steam Working Pressures up to 125 Pounds. These Valves are not intended to be Steam Tight

Size, No. 44.....inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price.....each	\$3.10	4.40	5.65	6.75	10.00	13.75	21.00

These Valves can be supplied with a Brass Stem, instead of Steel Stem, at an extra price.
Always specify Brass Butterfly Valves, otherwise sizes 2 inch and larger will be furnished in iron.

STANDARD HOSE VALVES

BRASS

No. 50. Iron Handle, Loose Swivel and Leather Disc

Size.....inches	1	1 1/4	1 1/2	2	2 1/2
Price, Rough Body, Plain.....each	\$3.15	3.70	4.75	7.00	8.50
Price, Rough Body, Plated all over.....each	3.65	4.30	5.50	8.00	9.75

No. 52. Finished Brass Wheel, Loose Swivel and Leather Disc

Size.....inches	1 1/2	2	2 1/2
Price, Finished all over.....each	\$9.00	11.50	14.50
Price, Finished and Plated all over.....each	10.00	12.75	16.00

No. 46 THROTTLE VALVES

For Steam Working Pressures up to 125 Pounds

These Throttle Valves are extensively used on hoisting and traction engines, are opened by one-quarter turn of handle, and are provided with stops. In ordering, always specify Brass Throttle Valves.

Size, No. 46.....inches	3/4	1	1 1/4	1 1/2	2	2 1/2
Price.....each	\$10.00	11.50	14.00	20.00	25.00	35.00

No. 34 STANDARD SWING CHECK VALVES

BRASS

For Steam Working Pressures up to 125 Pounds. May be Used in a Horizontal or Vertical Position

Size.....inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3
No. 34, Brass Disc.....each	\$1.80	2.00	2.25	2.80	3.65	4.75	6.75
No. 34 1/2, Leather Disc.....each	2.40	2.65	2.90	3.60	4.65	6.00	8.25

Valves with Brass Disc will always be furnished unless otherwise ordered.



Fig. 46



Fig. 34

GREAT LAKES SUPPLY CO.

Our many customers in the south and south-eastern sections of Chicago will find our South Chicago store, the Great Lakes Supply Co., always ready to take care of their wants promptly and at the same prices as at our down-town store. They maintain an independent delivery service, which will aid materially when goods are wanted in a hurry. Try them.

STANDARD HOSE GATE VALVES

Brass. Double Gate

Open to the left. Rising stem. For steam working pressures up to 125 pounds. For water working pressures up to 175 pounds.



Fig. 450. Iron Wheel

Fig. 450.
No. 450.

Fig. 58



Fig. 440 1/2

Size	inches	1	1 1/4	1 1/2	2	2 1/2	3
Rough body, plain, with brass cap and chain.....each		5.10	6.70	8.85	12.60	20.00	28.50
Rough body, plain, without cap and chain.....each		3.35	4.70	6.25	9.00	15.00	22.00

No. 452. WITH FINISHED BRASS WHEEL (Not Illustrated)

Size	inches	1	1 1/4	1 1/2	2	2 1/2	3
Finished all over, with brass cap and chain.....each		8.65	11.10	14.45	20.90	31.00	45.50
Finished all over, without cap and chain.....each		6.90	9.10	11.85	17.30	26.00	38.00
Fin. and plated all over, with brass cap & chain.....each		9.25	11.80	15.25	21.90	32.25	47.25
Fin. and plated all over, without cap and chain.....each		7.50	9.80	12.65	18.30	27.25	39.75

These Valves are made to order only.

STANDARD STRAIGHT-WAY VALVES

Fig. 440 1/2 Brass. Double Gate

Open to the left. Brass seats. Rising stem. For steam working pressures up to 125 pounds.

These Valves are made with taper instead of parallel seats and the self-adjusting discs which have their bearings near the outer edge, give maximum strength at these essential points and bring the discs tightly and uniformly to their seats.

Size	inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price	each	1.45	1.45	1.65	2.05	2.80	3.70	5.00
								7.30
								13.00
								19.00

QUICK OPENING STANDARD STRAIGHT-WAY VALVES

Fig. 442 1/2 With Taper Seats—Illustrated Below

Brass. Double wedge gate. Quick opening. For steam working pressures up to 125 pounds.

Size	inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3
No. 442 1/2, screwed	each	3.60	4.80	6.20	8.50	11.80	20.25	30.00

STANDARD GARDEN HOSE VALVES

Figs. 56-58 Brass with Leather Disc

These Valves will be furnished with Chicago hose thread, California hose thread or iron pipe thread, at regular prices. Any other style thread will be extra. In ordering always specify the thread required.

Size	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Price, No. 56.....each		1.65	1.65	2.20	3.40	4.75	7.00	15.00
Price, No. 58.....each		1.65	1.65	2.20	3.40	4.75	7.00	15.00

SPECIAL GLOBE AND ANGLE VALVES

Fig. 60 NEEDLE POINT

Brass with non-heating wheel. For working pressures up to 125 pounds.

These Valves are used for regulating fuel oil feed, and are made to order only.

Size	inches	1/16	1/4	3/16	1/2	3/4
Size feed opening.....inches		1/4	3/8	1/2	3/4	
Price, globe, female openings.....each		1.40	1.50	2.00	2.50	
Price, angle, female openings.....each		1.40	1.50	2.00	2.50	
Price, angle, with union.....each		2.00	2.20	3.00	3.50	

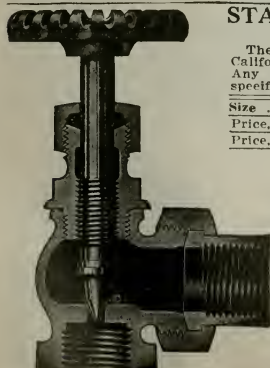


Fig. 60. Angle, With Union

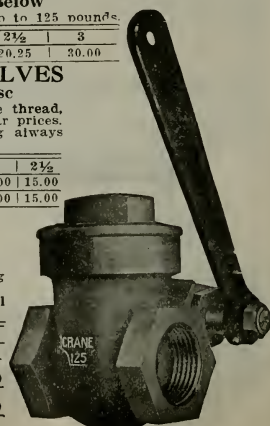


Fig. 442 1/2

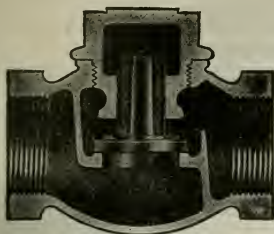


Fig. 76E. Screwed

HORIZONTAL CHECK VALVES

Fig. 76E EXTRA HEAVY

Cup pattern, Crane hard metal, flat seat. For steam working pressures up to 250 pounds. Tested to 800 pounds hydraulic pressure.

Cup Pattern Check Valves with a flat seat, have a full opening and are not choked by disc guides. They have a much larger seat and greater area than common valves and are so constructed that the back pressure comes on the top of valve, thus preventing the side wear of the seat, and insuring prompt closing.

Size	inches	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price	each	2.50	3.50	5.00	7.00	11.00



Fig. 74E. Horizontal

REGRINDING SWING CHECK VALVES

Figs. 74E-A74E EXTRA HEAVY

For steam working pressures up to 250 pounds. Tested to 800 pounds hydraulic pressure.

The body and disc will be made of "Hard Metal" when so ordered, at a special price, according to the quantity wanted.

Size	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
No. 74E, screwed	each	3.25	3.25	4.25	6.00	7.50	12.00	25.00
No. 75E, flanged	each				13.00	18.00	22.00	37.50
Diameter of flanges	inches				$4\frac{1}{2}$	5	6	$6\frac{1}{2}$

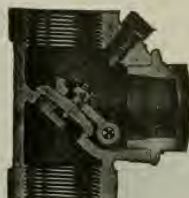


Fig. A74E. Vertical



Fig. 60E. Globe

GLOBE AND ANGLE VALVES

COPPER DISC, EXTRA HEAVY

Crane special brass, non-heating wheel with gland. For steam working pressures up to 250 pounds. Tested to 800 pounds hydraulic pressure.

In ordering, state whether Globe or Angle are wanted.



Fig. 66E.

Size	inches	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
No. 60E, screwed	each	3.25	3.75	4.25	5.50	7.75	10.00	15.00	27.50	38.50
No. 61E, flanged	each				11.00	15.00	21.00	28.00	45.00	68.00
Diameter of flanges	inches				$4\frac{1}{2}$	5	6	$6\frac{1}{2}$	$7\frac{1}{2}$	$8\frac{1}{2}$
Face to face, globe, flanged	inches				$4\frac{1}{8}$	$4\frac{1}{2}$	$5\frac{1}{8}$	$6\frac{1}{8}$	$7\frac{1}{8}$	$8\frac{1}{8}$
Center to face, angle, flanged	inches				$2\frac{1}{8}$	$3\frac{1}{8}$	$3\frac{3}{4}$	$4\frac{1}{8}$	$4\frac{1}{2}$	$5\frac{1}{4}$
Price, extra copper discs	each	.08	.08	.10	.12	.18	.24	.36	.48	.80

An extra price is charged for drilling flanged valves.

Fig. 66E. STRAIGHT-WAY VALVES EXTRA HEAVY

Crane special brass, with gland. Wedge gate. Open to the left. Non-rising stem. For steam working pressures up to 250 lbs. Tested to 800 lbs. hydraulic pressure per square inch. For water working pressures up to 350 lbs. These valves may be packed when wide open and under pressure.

Size	inches	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
No. 66E, screwed	each	4.00	5.00	6.00	8.00	11.25	16.50	23.00	40.00	65.00
No. 67E, flanged	each				16.00	21.50	30.00	41.00	65.00	100.00
Diameter flanges	inches				$4\frac{1}{2}$	5	6	$6\frac{1}{2}$	$7\frac{1}{2}$	$8\frac{1}{2}$
Face to face, flanged	inches				$4\frac{1}{8}$	$4\frac{1}{4}$	$5\frac{1}{8}$	$6\frac{1}{8}$	$7\frac{1}{8}$	$8\frac{1}{8}$

STANDARD FOOT VALVES

IRON BODY WITH STRAINER, LEATHER DISC
Tested to 100 Pounds Hydraulic Pressure



Style, Sizes $\frac{3}{4}$ inch
to 6 inch

Fig. 394

Size inches	Price No. 394 Screwed each	Price No. 394 Galvanized each	Price No. 395 Flanged each	Largest O. D. No. 394 inches	Total Height No. 394 inches	Largest O. D. No. 396 inches	Total Height No. 395 inches	Diameter Flanges inches
$\frac{3}{4}$	1.15	1.75		$3\frac{3}{4}$	$3\frac{1}{2}$			
1	1.30	2.00		$3\frac{3}{4}$	$3\frac{1}{2}$			
$1\frac{1}{4}$	1.40	2.10		$4\frac{1}{2}$	$3\frac{3}{4}$			
$1\frac{1}{2}$	1.90	2.85		$5\frac{1}{4}$	$4\frac{1}{2}$			
2	2.40	3.60	3.50	$5\frac{1}{2}$	$5\frac{3}{4}$	6	$5\frac{1}{2}$	6
$2\frac{1}{2}$	3.30	5.00	4.50	$6\frac{1}{4}$	$6\frac{1}{4}$	7	$6\frac{3}{4}$	7
3	3.90	5.75	5.75	7	$6\frac{3}{4}$	$7\frac{1}{2}$	7	$7\frac{1}{2}$
$3\frac{1}{2}$	5.60	8.50	7.50	$8\frac{3}{4}$	$8\frac{3}{4}$	$8\frac{3}{4}$	$9\frac{1}{4}$	$8\frac{1}{2}$
4	7.30	11.00	9.50	$8\frac{3}{4}$	$8\frac{3}{4}$	9	$9\frac{1}{4}$	9
$4\frac{1}{2}$	10.50	15.75	13.00	$10\frac{1}{2}$	$10\frac{1}{2}$	$10\frac{1}{2}$	$11\frac{1}{4}$	$9\frac{1}{4}$
5	11.25	16.75	14.00	$10\frac{1}{2}$	$10\frac{1}{2}$	$10\frac{1}{2}$	$11\frac{1}{4}$	10
6	14.75	22.00	17.50	$11\frac{3}{4}$	$11\frac{3}{4}$	$11\frac{3}{4}$	$12\frac{3}{4}$	11
7	35.00		38.00	$13\frac{1}{4}$	$10\frac{3}{4}$	$13\frac{1}{4}$	$11\frac{3}{4}$	$12\frac{1}{2}$
8	41.00		45.00	$15\frac{1}{4}$	$12\frac{1}{4}$	$15\frac{1}{4}$	$13\frac{1}{4}$	$13\frac{1}{2}$
10	64.00		70.00	$19\frac{3}{4}$	$18\frac{1}{2}$	$19\frac{3}{4}$	$18\frac{1}{4}$	16
12	100.00		112.00	$20\frac{1}{4}$	$16\frac{3}{4}$	$20\frac{1}{4}$	18	19
14			150.00			$24\frac{1}{4}$	$19\frac{3}{4}$	21
15			175.00			$25\frac{1}{4}$	$21\frac{3}{4}$	$22\frac{1}{4}$
16			200.00			27	$24\frac{1}{2}$	$23\frac{1}{4}$

These Valves, as constructed, insure free openings.



Style, Sizes 7 inch
to 16 inch

Fig. 394A

STANDARD BUTTERFLY VALVES

Iron Body. Brass Trimmings
For Steam Working Pressures up to 125 Pounds



Fig. 380

Size	in.	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5
No. 380, screwed	each	8.00	9.50	12.00	16.00	18.50	28.50
No. 381, flanged	each	9.50	11.50	15.00	19.00	22.00	32.00
End to end, sc'wed.....	in.	$4\frac{1}{4}$	$4\frac{3}{4}$	$5\frac{1}{4}$	$5\frac{1}{2}$	6	$6\frac{3}{4}$
Face to face, flg'd.....	in.	$4\frac{1}{4}$	$4\frac{3}{4}$	$5\frac{1}{4}$	$5\frac{1}{4}$	6	$6\frac{3}{4}$
Diameter of flanges.....	in.	6	7	$7\frac{1}{4}$	$8\frac{1}{4}$	9	10
Size	in.	6	8	10	12	14	16
No. 380, screwed	each	42.50					
No. 381, flanged	each	47.00	90.00	125.00	160.00	275.00	350.00
End to end, sc'wed.....	in.	$7\frac{1}{2}$					
Face to face, flg'd.....	in.	$7\frac{1}{4}$	$9\frac{1}{4}$	$10\frac{3}{4}$	$12\frac{1}{4}$	14	16
Diameter of flanges.....	in.	11	$13\frac{1}{4}$	16	19	21	$23\frac{1}{2}$

These Valves are not intended to be steam tight.
Can be made with a brass stem instead of steel stem, at an extra price.

STANDARD HORIZONTAL CHECK VALVES

Iron Body. Brass Trimmings
For Steam Working Pressures up to 125
Pounds



Fig. 366 Screwed

Size ... inches	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	6
Price ... each	3.60	6.50	8.80	12.25	14.25	19.00	22.00	30.00

No. 367 FLANGED

Size	in.	3	4	5	6	7
Price	each	11.50	18.00	26.00	35.00	50.00
Face to face.....	in.	$9\frac{1}{2}$	11	13	14	16
Flam. flanges	in.	$7\frac{1}{4}$	9	10	11	$12\frac{1}{2}$
Size	in.	8	10	12	14	15
Price	each	62.00	115.00	175.00	300.00	
Face to face.....	in.	17	20	24	28	30
Diam. flanges.....	in.	$13\frac{1}{4}$	16	19	21	$22\frac{1}{4}$

STANDARD STRAIGHT-WAY VALVES

FOR STEAM WORKING PRESSURES

Sizes 16 inch and Smaller, up to 125 Pounds

Sizes 18 inch and Larger, up to 100 Pounds



Fig. 461

Iron Body. Brass Trimmings. Wedge gate. Open to the left. Non-rising stem.

Size	inches	1½	2	2½	3	3½	4	4½	5
No. 460, Screwed.....	each	\$9.00	10.00	12.00	15.00	18.00	20.00	23.00	25.00
No. 461, Flanged.....	each	9.00	10.00	12.00	15.00	18.00	20.00	23.00	25.00
End to End, Screwed.....	inches	5	5½	5¾	6½	6½	6¾	7¼	7½
Face to Face, Flanged.....	inches	6½	7	7½	8	8½	9	9½	10
Diameter Flanges.....	inches	5	6	7	7½	8½	9	9½	10

Size	inches	6	7	8	9	10	12	14	15
No. 460, Screwed.....	each	\$30.00	45.00	55.00	80.00	90.00	125.00		
No. 461, Flanged.....	each	30.00	45.00	55.00	80.00	90.00	125.00	190.00	240.00
End to End, Screwed.....	inches	7¾	8¾	8½	9¾	9¾	11½		
Face to Face, Flanged.....	inches	10½	11	11½	12	13	14	15	15
Diameter Flanges.....	inches	11	12½	13½	15	16	19	21	22¾

Size	inches	16	18	20	22	24	26	28	30
No. 461, Flanged.....	each	\$275.00	375.00	425.00	525.00	600.00	800.00	1000.00	1200.00
Face to Face, Flanged.....	inches	16	17	18	19	20	23	26	30
Diameter Flanges.....	inches	23½	25	27½	29½	32	34¾	36½	38¾

STANDARD EXPANSION JOINTS

Iron Body. Brass Sleeve

FOR STEAM WORKING PRESSURES UP TO 125 POUNDS

No. 398. SCREWED, STANDARD TRAVERSE

Size	inches	2	2½	3	3½	4	4½	5
Traverse	inches	2½	2½	2¾	3	3¼	3½	4
E. to E., Opened.....	inches	11½	12¼	13¾	14¼	15¼	16	17¼
Price	each	\$7.00	8.00	10.00	14.00	18.00	30.00	38.00
Size	inches	6	7	8	9	10	12	
Traverse	inches	5	6	7	7	7	8	
E. to E., Opened.....	inches	20½	23¼	26¼	27	28	31¾	
Price	each	\$45.00	70.00	100.00	110.00	160.00	225.00	



Fig. 398

STEAM SWING JOINTS

Brass

FOR STEAM WORKING PRESSURES UP TO 125 POUNDS

Size	inches	½x½	¾x¾	1x1	1¼x1¼	1½x1½	2x2
Price, Rough	each	\$2.50	3.50	5.00	6.50	9.00	13.00
*Price, Finished	each	3.00	4.00	5.75	7.25	10.00	15.00

*Finished Swing Joints are made to order only.



Fig. 300



Fig. 354

STANDARD GLOBE, ANGLE AND CROSS VALVES

Iron body, brass mounted. For steam working pressures up to 100 lbs.

Size	inches	1	1½	2	2½	3
No. 354, globe, screwed.....each	2.25	2.75	3.50	5.40	7.35	9.80
No. 355, globe, flanged.....each	.....	.....	.....	7.00	9.00	12.50
No. 356, angle, screwed.....each	2.25	2.75	3.50	5.40	7.35	9.80
No. 357, angle, flanged.....each	.....	.....	.....	7.00	9.00	12.50
No. 364, cross, screwed.....each	.....	.....	.....	6.50	9.00	12.50
No. 365, cross, flanged.....each	.....	.....	.....	9.00	11.75	16.50
Diameter of flanges.....inches	.....	.....	.....	6	7	7½

IRON BODY VALVES, WITH YOKE, BRASS TRIMMINGS



Fig. 351



Fig. 353

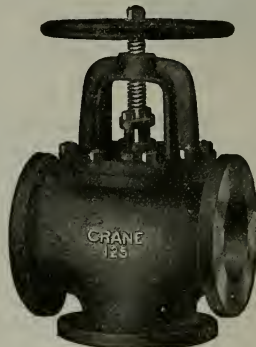


Fig. 363

Fig. 351. STANDARD GLOBE VALVES

Iron body, with yoke, brass trimmings. For steam working pressures up to 125 lbs.

Size	inches	2	2½	3	3½	4	4½	5	6
No. 350, screwed	each	7.00	9.00	12.50	15.25	19.00	24.00	27.00	37.50
No. 351, flanged	each	8.60	10.75	15.00	18.50	22.50	27.50	31.00	42.00
Face to face, flanged.....	inches	8	8½	9½	10½	11	12	13	14
Diameter flanges	inches	6	7	7½	8½	9	9½	10	11
Size	inches	7	8	10	12	14	15	16	.....
No. 350, screwed	each	63.00	72.00	114.00	170.00	.....	.....	.....	.....
No. 351, flanged	each	68.00	77.00	123.00	187.00	350.00	.....	475.00	.....
Face to face, flanged.....	inches	16	17	20	24	28	30	32	.....
Diameter flanges	inches	12½	13½	16	19	21	22½	23½	.....

Fig. 353. STANDARD ANGLE VALVES

Iron body, with yoke, brass trimmings. For steam working pressures up to 100 lbs.

Size	inches	2	2½	3	3½	4	4½	5	6
No. 352, screwed	each	7.00	9.00	12.50	16.25	19.00	24.00	27.00	37.50
No. 353, flanged	each	9.60	10.7	15.00	18.50	22.50	27.50	31.00	42.00
Center to face, flanged.....	inches	4	4½	4¾	5½	5½	6	6½	7
Diameter flanges	inches	6	7	7½	8½	9	9½	10	11
Size	inches	7	8	10	12	14	15	16	.....
No. 352, screwed	each	63.00	72.00	114.00	170.00	.....	.....	.....	.....
No. 353, flanged	each	68.00	77.00	123.00	187.00	350.00	425.00	475.00	.....
Center to face, flanged.....	inches	8	8½	10	12	14	15	16	.....
Diameter flanges	inches	12½	13½	16	19	21	22½	23½	.....

Fig. 363. STANDARD CROSS VALVES

Iron body, with yoke, brass trimmings. For steam working pressures up to 125 lbs.

Size	inches	3	3½	4	4½	5	6	7	8	10	12
Price	each	20.00	25.00	28.50	36.00	41.00	54.00	85.00	100.00	175.00	265.00
Diameter of flanges.....	inches	7½	8½	9	9½	10	11	12½	13½	16	19
Face to face, flanges.....	inches	9½	10½	11	12	13	14	16	17	20	24

EXTRA HEAVY VALVES

Ferrosteel. Hard metal seats. For steam working pressures up to 250 pounds. Tested to 800 pounds hydraulic pressure per square inch.



Fig. 21E



Fig. 2E

Fig. 21E. EXTRA HEAVY GLOBE VALVES WITH YOKE

In ordering, always specify the style number of Valve wanted.

Size	inches	2	2½	3	3½	4	4½	5
No. 20 E, Screwed.....each		\$26.00	33.00	37.00	42.00	46.00	56.00	61.00
No. 21 E, Flanged.....each		27.50	35.00	40.00	45.00	50.00	60.00	65.00
End to End, Screwed.....inches		9½	10¾	11¾	12¾	13	14	15
Face to Face, Flanged.....inches		10½	11½	12½	13¼	14	15	15¾
Diameter Flanges.....inches		6½	7½	8¾	9	10	10½	11
Size	inches	6	7	8	10	12	14	15
No. 20 E, Screwed.....each		\$75.00	95.00	114.00	190.00			
No. 21 E, Flanged.....each		80.00	100.00	120.00	200.00	300.00	400.00	400.00
No. 27 E, Flanged, with By-Pass.....each				150.00	250.00	350.00	450.00	450.00
End to End, Screwed.....inches		16½	18¼	20	23¼			
Face to Face, Flanged.....inches		17½	19¼	21	24½	28	33	33
Diameter Flanges.....inches		12½	14	15	17½	20½	23	24½
Size of By-Pass.....inches				1½	1½	2	2	2

The By-Pass on Globe Valves is located on the right hand side looking at the inlet end, that is, the end with the passage under the disc. It is desirable that all Valves, 8 inch and larger, should have a By-Pass.

Fig. 2E EXTRA HEAVY STRAIGHT-WAY VALVES

Ferrosteel. Hard metal seats. Wedge gate. Open to the left. Non-rising stem. For steam working pressures up to 250 pounds. Tested to 800 pounds hydraulic pressure per square inch.

Size	inches	1½	1½	2	2½	3	3½	4	4½	5
No. 2 E, Screwed.....each		\$24.00	25.00	27.50	33.00	45.00	57.00	60.00	77.00	85.00
No. 3 E, Flanged.....each		26.50	27.50	30.00	35.50	48.00	60.00	65.00	82.00	90.00
End to End, Screwed.....inches		5½	6¾	7	8	9	10	11	12¼	13½
Face to Face, Flanged.....inches		6½	7½	8½	9½	11½	11¾	12	13¼	15
Diameter Flanges.....inches		5	6	6½	7½	8¼	9	10	10½	11
Size	inches	6	7	8	10	12	14	15	16	
No. 2 E, Screwed.....each		\$100.00	125.00	155.00	225.00	250.00				
No. 3 E, Flanged.....each		107.00	132.00	162.00	232.00	258.00	335.00	440.00	540.00	675.00
End to End, Screwed.....inches		15½	16¼	16½	17	18				
Face to Face, Flanged.....inches		15½	16¼	16½	17	18	19¾	22½	22½	24
Diameter Flanges.....inches		12½	14	15	16¼	17½	20½	23	24½	25½

It is desirable that all Valves 8 inch and larger should have a By-Pass. See Index. We do not recommend the use of Screwed Valves larger than 6 inch.

EXTRA HEAVY SWING CHECK VALVES



Ferrosteel.

Fig. 442

Hard Metal Seats.

For steam working pressure up to 250 pounds. Tested to 800 pounds hydraulic pressure per square inch.

May be used in horizontal or vertical position.

Size	inches	2	2½	3	3½	4	4½	5
No. 38 E. Screwed.....	each	\$15.00	20.00	28.00	36.00	41.00	49.00	54.00
No. 39 E. Flanged.....	each	17.00	22.00	30.00	38.00	44.00	52.00	57.00
End to End, Screwed.....	inches	9½	10¾	11¾	12¾	13	14	15
Face to Face, Flanged.....	inches	10½	11½	12½	13½	14	15	15¾
Diameter Flanges.....	inches	6½	7½	8½	9	10	10½	11
Size	inches	6	7	8	10	12	14	15
No. 38 E. Screwed.....	each	\$66.00	84.00	100.00	170.00			
No. 39 E. Flanged.....	each	70.00	88.00	105.00	175.00	250.00	350.00	350.00
End to End, Screwed.....	inches	16½	18¾	20	23¾			
Face to Face, Flanged.....	inches	17½	19¾	21	24½	28	33	33
Diameter Flanges.....	inches	12½	14	15	17½	20½	23	24½

PRICE LIST FOR FACING FLANGES OF MEDIUM AND EXTRA HEAVY VALVES



Fig. 434A.

Male Face



Fig. 434B.

Female Face



Fig. 434C.

Tongued Face



Fig. 434D.

Grooved Face



Fig. 434E.

Raised Face



Fig. 434F.

Bolt Holes Spot Faced

Size	inches	1	1¼	1½	2	2½	3	3½	4
For Male, Female, Tongued, Grooved or Raised Faces, add net per Valve with two Flanges.....		\$1.00	1.00	1.00	1.00	1.25	1.25	1.25	1.25
For Male, Female, Tongued, Grooved or Raised Faces, add net per Valve with three Flanges....		1.25	1.25	1.25	1.75	1.75	1.75	1.75	1.75
For Spot Facing, add net per Flange.....		.20	.20	.20	.20	.20	.20	.40	.40
Size	inches	4½	5	6	7	8	9	10	12
For Male, Female, Tongued, Grooved or Raised Faces, add net per Valve with two Flanges.....		\$1.25	1.25	1.50	1.50	2.00	2.00	2.00	2.50
For Male, Female, Tongued, Grooved or Raised Faces, add net per Valve with three Flanges....		1.75	1.75	2.00	2.00	2.50	2.50	2.50	3.00
For Spot Facing, add net per Flange.....		.40	.40	.60	.60	.60	.60	.80	.80
Size	inches	14	15	16	18	20	22	24	
For Male, Female, Tongued, Grooved or Raised Faces, add net per Valve with two Flanges.....		\$3.25	3.25	4.00	5.00	6.00	8.00	10.00	
For Male, Female, Tongued, Grooved or Raised Faces, add net per Valve with three Flanges....		4.00	4.00	5.00	6.25	7.50	10.00	12.50	
For Spot Facing, add net per Flange.....		1.00	1.00	1.00	1.20	1.20	1.40	1.40	

Unless otherwise specified, all flanges of Medium and Extra Heavy Valves will be furnished with 1/16 inch raised face, for which no extra charge is made.



Fig. 993. Angle

BALANCED TANK FLOAT VALVES

Suitable for Cold Water Working Pressures
up to 200 Pounds



Fig. 995. Globe

Size Inches	Diameter of Copper Float Inches	Diameter of Flanges Inches	Face to Face Screwed End Inches	Face to Face Flanged End Inches	Price Angle or Globe Each
3/4	7		3 3/8		11.00
1	7		4 1/8		13.00
1 1/4	7		4 3/4		14.00
1 1/2	7		4 7/8		16.00
2	7		6 1/8	7 1/2	19.00
2 1/2	8	7	8	9	25.00
3	8	7 1/2	9 1/8	9 3/4	31.00
3 1/2	8	8 1/2	9 3/8	9 3/4	36.00
4	8	9	9 7/8	10 5/8	42.00
4 1/2	10	9 1/4	11 1/4	10 5/8	50.00
5	10	10	11 1/4	12 1/4	54.00
6	10	11	12 1/4	13	64.00
7	10	12 1/2		14 5/8	76.00
8	10	13 1/2		16 1/4	86.00
10	12	16		20 1/4	110.00
12	12	19		22 3/4	150.00

The above prices are for either angle or globe, complete with float and levers as shown. Screwed up to 2 inch; either screwed or flanged 2 1/2 to 6 inch; and flanged only, 7 inch and larger. Sizes 3/4 to 1 1/2 inch are made of brass; sizes 2 inch and larger have iron body with brass valve, seats and trimmings.

When ordering, state whether angle or globe, screwed or flanged. Unless otherwise specified, Angle Valves will be furnished screwed up to and including 6 inch; larger sizes flanged only.

HYDRANT CLAMPS



Fig. 850

Size of Cock to be used with.....inches	1/2	3/4	1	1 1/4
No. 850, Malleable Iron, with 3/8 inch square hole.....per lb.	\$0.15	.15	.15	
No. 850, Malleable Iron, with 1/2 inch square hole.....per lb.	.15	.15	.15	.15
No. 850, Malleable Iron, with 3/4 inch square hole.....per lb.	.15	.15	.15	.15
No. 850, Malleable Iron, tapped for 3/8 inch pipe.....per lb.	.18	.18	.18	.18
No. 850, Malleable Iron, tapped for 1/2 inch pipe, Galv.....per lb.	.25	.25	.25	.25
No. 850, Malleable Iron, tapped for 3/4 inch pipe.....per lb.	.20	.20	.20	.20
No. 852, Brass .....each	.20	.20	.25	.30

BLOW-OFF CROSSES

CAST IRON

Standard: For Steam Working Pressures up to 125 Pounds

Extra Heavy: For Steam Working Pressures up to 250 Pounds



Fig. 325A

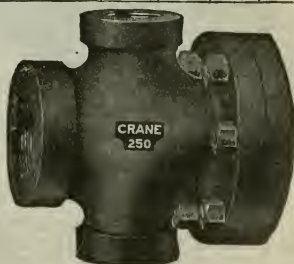


Fig. 325B

LIST PRICES OF STANDARD

Size .....inches	2 1/2x1 1/2	2 1/2x2	2 1/2x2 1/2	3x1 1/2	3x2	4x2
Price .....each	\$9.00	9.00	9.00	10.00	10.00	12.00

LIST PRICES OF EXTRA HEAVY

Size .....inches	2 1/2x2 1/2	3x2	4x2	4x2 1/2
Price .....each	\$12.00	13.50	16.00	16.00

ENGINE STOPS—GAS FITTERS' SUPPLIES

TINNED STRAPS



Size .. Inches	¼	⅜	½	¾	1	1 ¼	1 ½	2
Price. Per lb.	\$0.18	.18	.18	.18	.18	.18	.18	.18

GAS FITTERS' HOOKS



Wrought Iron

Size .. Inches	¼	⅜	½	¾	1	1 ¼	1 ½	2
Price. Per 100	\$0.30	.35	.40	.50	.65	.85	1.00	1.30

WRENCHES FOR BRASS, STEAM AND GAS COCKS



Square Head—Malleable Iron

Size In.	¼	⅜	½	¾	1	1 ¼	1 ½	2	2 ½ & 3
No. ...	1	2	3	4	5	6	7	8	9
Each .	\$0.05	.06	.07	.09	.14	.19	.25	.44	.56

GAS STOVE COCKS



Brass. With Check. Lever Handle

Size .....Inches	¼	⅜	½	¾	1
Price, with Check Each	\$1.15	1.25	1.35	2.15	3.25

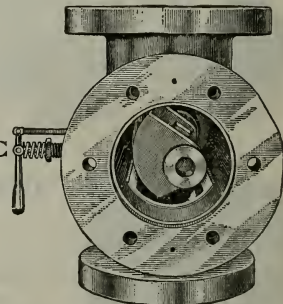
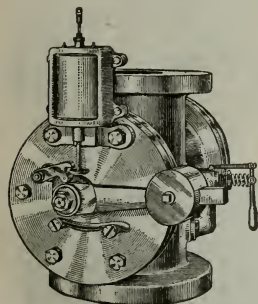
WRENCHES FOR BRASS, STEAM AND GAS COCKS



Flat Head—Malleable Iron

Size .....Inches	½	¾	1	1 ¼	1 ½	2	...
Number	1	2	3	5	6	7	8
Each ...	\$0.07	.09	.14	.25	.44	.56	1.00

ENGINE STOPS

PACKINGLESS AND
FRICTIONLESS AUTOMATIC
ENGINE STOP

Approved and indorsed by Casualty companies, State Factory and Safety commissions and is the choice of leading manufacturers.

It is recommended in preference to clutch equipment or bell signal system, and will save you money on fly wheel insurance.

Provides an independent and reliable means of control over your power plants. Prevents the possibility of engine room or factory shut-downs, due to broken drive belts, overloaded generators, governor derangements, overspeeding, and bursting fly-wheels, cylinder head blowouts, etc.

ARRANGED FOR Purely Mechanical Operation, Purely Electrical Operation, Combined Electro-Mechanical Operation.

State size of steam pipe for quotation purposes.

COCKS



Fig. 804



Fig. 812

ROUGH STOP COCKS

SCREWED FOR IRON PIPE

Tee or Lever Handle. Nut and Washer

No. 804

Size	inches	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price, Tee Handle	per doz.	\$21.00	\$29.40	\$36.00	\$52.80	\$89.40	\$149.40	\$258.00
Price, Lever Handle	per doz.	21.00	29.40	36.00	52.80	89.40	149.40	258.00

ROUND-WAY ROUGH STOP COCKS

SCREWED FOR IRON PIPE

Tee or Lever Handle. Nut and Washer

No. 812

Size	inches	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price, Tee Handle	per doz.	\$26.40	\$36.00	\$46.20	\$73.80	\$120.60	\$197.40	\$342.00
Price, Lever Handle	per doz.	26.40	36.00	46.20	73.80	120.60	197.40	342.00
Price, Tee Handle with C. & W.	per doz.	27.00	36.60	46.80	75.00	122.40	200.40	348.00
Price, Lever Handle with C. & W.	per doz.	27.00	36.60	46.80	75.00	122.40	200.40	348.00



Fig. 814



Fig. 806

BRINE COCKS

Brass. Male and Female. Lever Handle

No. 814

Size	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$
Price	each	\$1.35	\$2.00	\$3.00	\$4.50

CHECK AND WASTE COCKS

SCREWED FOR IRON PIPE

Tee or Lever Handle. Nut and Washer

No. 806

Size	inches	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price, Tee Handle with C. & W.	per doz.	\$21.60	\$30.00	\$36.60	\$54.00	\$91.20	\$152.40	\$264.00
Price, Lever Handle with C. & W.	per doz.	21.60	30.00	36.60	54.00	91.20	152.40	264.00

Waste Tubes extra.

REVERSIBLE STOP AND WASTE COCKS

Tested to 200 Pounds Hydraulic Pressure

SCREWED FOR IRON PIPE

Interchangeable from Right to Left

When ordering, always give style number, and state if they are wanted with or without waste, and whether with Tee or Lever Handle. Unless otherwise specified, we will furnish Lever Handle Cocks. Waste tubes extra.

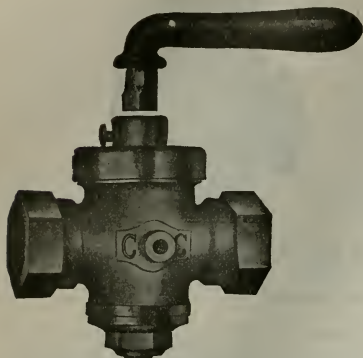


Fig. S20. Flat Way, or Fig. S22, Round Way. Tee or Lever Handle

Size	inches	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{4}$	1
No. S20, Flat Way.....per doz.	\$21.00	29.40	36.00	52.80	
No. S20, with Check and Waste.....per doz.	21.60	30.00	36.60	54.00	
No. S22, Round Way.....per doz.	26.40	36.00	46.20	73.80	
No. S22, with Check and Waste.....per doz.	27.00	36.60	46.80	75.00	

These Reversible Stop Cocks are fully guaranteed as to workmanship and material. They embody the best points of other makes of Cocks, and also other important features.

SOLDERING UNIONS AND NIPPLES



Fig. S42

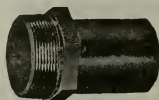


Fig. S44



Fig. S46

Size	inches	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2
No. S42, Union	per doz.	\$4.80	\$6.00	\$7.80	\$10.20	\$13.20	\$15.00	\$21.00
No. S44, Male Nipple	per doz.	3.60	4.20	6.00	8.40	10.80	15.00	21.00
No. S46, Female Nipple	per doz.	3.60	4.20	6.00	8.40	10.80	15.00	21.00

Soldering Nipples larger than 2 inch, made to order at a special price.

Drainage Soldering Nipples, see Index.

CORPORATION STOP COCKS



Fig. S30



Fig. S33



Fig. S34

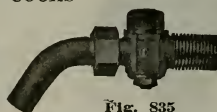


Fig. S35



Fig. S36

Nos. S30 and S33. Have inside thread to fit Mueller, Payne's and Lennox Tapping Machine Screw Plugs and long male thread for Mueller, Payne's and Lennox Taps.

No. S33. Has Iron Pipe Thread on outlet one size larger.

No. S34. Has Iron Pipe Threads both ends.

Nos. S35 and S36. Have coarse thread for Wood Pipe Mains.

No. S36. Has Iron Pipe Thread on outlet.

Nos. S30 and S35. Furnished with straight Tail Piece when so specified.

Nos. S33, S34 and S36. In $\frac{5}{8}$ inch size, have $\frac{3}{4}$ inch Iron Pipe Thread on outlet.

Size of Opening.....	inches	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1
No. S30.....per doz.	\$19.20	\$27.00	\$34.20	\$54.00	
No. S33.....per doz.	17.40	23.40	30.00	48.00	
No. S34.....per doz.	17.40	23.40	30.00	48.00	
No. S35.....per doz.	24.00	32.40	40.80	64.80	
No. S36.....per doz.	22.20	28.80	36.60	58.80	

CYLINDER AND GAUGE COCKS

Fig. 720 CYLINDER COCKS
With Union Coupling



Size, iron pipe thread, inches	$\frac{3}{4}$ x $\frac{3}{4}$	$\frac{1}{2}$ x $\frac{3}{4}$	$\frac{3}{4}$ x $\frac{3}{4}$
No. 720, lever handle....each	2.00	2.50	3.75

Fig. 730 COMPRESSION GAUGE COCKS



Size, iron pipe thread, inches	$\frac{3}{4}$	$\frac{1}{2}$
Price .....each	.95	1.00

Suitable for steam working pressures up to 175 pounds.

Fig. 734 COMPRESSION GAUGE COCKS
With Stuffing Box



Size, iron pipe thread, inches	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
Price .....each	1.20	1.30	1.45

Suitable for steam working pressures up to 175 pounds.

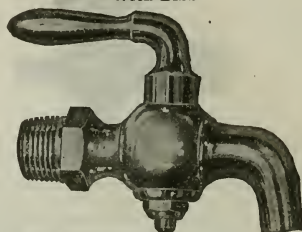
Fig. 738 MISSISSIPPI GAUGE COCKS



Size, iron pipe thread, inches	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
Price .....each	.90	1.20	1.80

The Mississippi Gauge Cocks are recommended for steam working pressures up to 175 pounds.

Fig. 724 CYLINDER COCKS
With Bibb



Size, iron pipe thread, inches	$\frac{3}{4}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
No. 722, tee handle.....each	1.70	1.00	1.15	1.60	2.35
No. 724, lever handle.....each	1.85	1.15	1.30	1.85	2.60

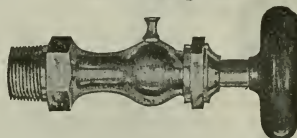
Fig. 732 COMPRESSION GAUGE COCKS



Size, iron pipe thread, inches	$\frac{1}{2}$	$\frac{3}{4}$
Price .....each	1.20	1.35

Suitable for steam working pressures up to 175 pounds.

Fig. 736 COMPRESSION GAUGE COCKS
With Stuffing Box



Size, iron pipe thread, inches	$\frac{1}{2}$	$\frac{3}{4}$
Price .....each	1.50	1.70

The above Gauge Cocks are suitable for steam working pressures up to 175 pounds.

Fig. 740 BALL GAUGE COCKS



Size, iron pipe thread, inches	$\frac{1}{2}$	$\frac{3}{4}$
Price .....each	1.00	1.00

The above Ball Gauge Cocks are recommended for steam working pressures up to 100 pounds.

GEO. B. CARPENTER & CO.

STEAM GAUGE AND AIR COCKS



Fig. 700

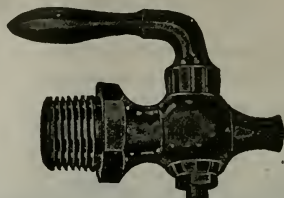


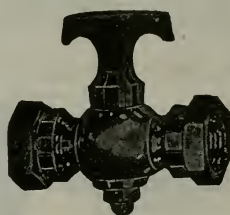
Fig. 706

Size, iron pipe thread.....	inches	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$
No. 700, tee handle.....	each	.40	.45	.50	.60
No. 702, lever handle.....	each	.55	.60	.65	.75
No. 704, tee handle.....	each		.80	.85	.90
No. 706, lever handle.....	each		.95	1.00	1.05

STEAM GAUGE AND AIR COCKS

Fig. 708
With Male Threads

Size, iron pipe threads.....	inches	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
No. 708, tee handle.....	each	.55	.65	.75
No. 710, lever handle.....	each	.70	.80	.90

Fig. 712
With Female Threads

Size, iron pipe threads.....	inches	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
No. 712, tee handle.....	each	.75	.85	.95
No. 714, lever handle.....	each	.90	1.00	1.10

COMBINATION WATER AND STEAM GAUGES
DIMENSIONS OF COMBINATION BODIES

Number.....	1	2	3	4
Center to center of boiler connections.....	inches 10	12 $\frac{1}{2}$	14	18
Center to center of water gauge connections.....	inches 10	12 $\frac{1}{2}$	14	18
Center to center of gauge cocks.....	inches 3 $\frac{3}{4}$	3 $\frac{3}{4}$	4 $\frac{1}{2}$	4
Extreme length.....	inches 13 $\frac{3}{4}$	16 $\frac{3}{4}$	18 $\frac{3}{4}$	23 $\frac{3}{4}$
Tapped for boiler connections.....	inches $\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$
Tapped for water gauge connections.....	inches $\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
Tapped for gauge cocks.....	inches $\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$
Top and bottom tapped.....	inches $\frac{3}{8}$	$\frac{3}{8}$	1	1 $\frac{1}{4}$

No. 640. COMBINATION BODIES ONLY

Number.....	1	2	3	4
Price, No. 640, bodies only, tapped and painted.....	each 2.75	4.00	6.00	8.00

Fig. 640. COMBINATION GAUGES COMPLETE

Use price of bodies as above and add the price of trimmings as specified below, or prices of any other trimmings, as may be preferred.

The following list of trimmings are suitable for pressures up to 175 lbs.

For pressures up to 250 lbs. use Special Extra Heavy Gauge Cocks and Water Gauge, see index.

Number.....	1	2	3	4
Gauge cocks required.....	2 No. 730	3 No. 732	3 No. 732	3 No. 736
Size, iron pipe thread.....	inches $\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$
1 Water gauge.....	No. 624	616	610	610
1 Iron case steam gauge, Bourdon spring, size.....	inches 5	5	6	6
1 Nipple, size.....	inches $\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
1 Globe valve, size.....	inches $\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
1 Syphon, size.....	inches $\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
1 Rushing, size.....	inches $\frac{1}{2} \times \frac{1}{4}$	$\frac{3}{4} \times \frac{1}{4}$	1 $\times \frac{1}{4}$	1 $\frac{1}{4} \times \frac{1}{4}$

When not otherwise specified, complete Combination Gauges will be trimmed and furnished as in above list.



Fig. 640

AIR COCKS

BRASS

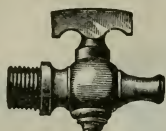


Fig. 4401. T Handle, Single Thread

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Price	each, \$0.40	.45	.50	.60

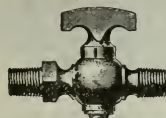


Fig. 4401B. T Handle, Double Thread

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Price	each, \$0.55	.65	.75	.90



Fig. 4401C. T Handle, Bibb Nose

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Price	each, \$0.70	.80	.90	1.00



Fig. 4402A. T Handle, Female

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	
Price	each, \$0.65	.70	.85	

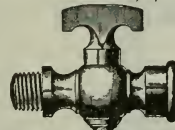


Fig. 4402B. T Handle, Male and Female

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	
Price	each, \$0.75	.80	.90	



Fig. 4405. T Handle, Female

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	
Price	each, \$0.65	.70	.85	

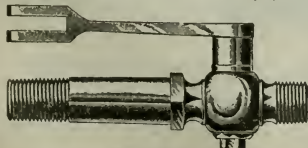


Fig. 4406

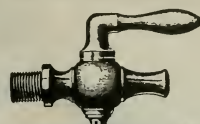
STEAM GAUGE
COCKS

Fig. 4403A. Lever Handle, Single Thread

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Price	each, \$0.55	.60	.65	.75



Fig. 4403B. Lever Handle, Double Thread

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Price	each, \$0.70	.80	.90	1.05



Fig. 4403C. Lever Handle, Bibb Nose

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$
Price	each, \$0.85	.95	1.05	1.15



Fig. 4404A. Lever Handle, Female

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	
Price	each, \$0.80	.85	1.00	



Fig. 4404B. Lever Handle, Male and Female

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	
Price	each, \$0.90	.95	1.05	



Fig. 4406. Lever Handle, with Union

Size	inches, $\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	
Price	each, \$1.75	1.90	2.00	

TRACTION ENGINE CYLINDER COCK

Size Pipe Thread	inches, $\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Price, Short Shank	each, \$1.30	1.40	1.85	3.25
Price, Long Shank	"	1.55	1.70	2.20
				4.00

FOR OTHER TYPES OF COCKS, SEE INDEX

BRASS BIBB COCKS

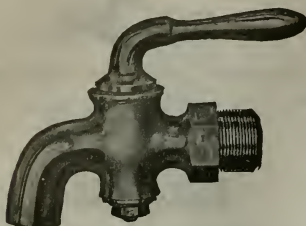


Fig. 800. Finished

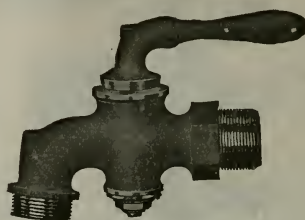


Fig. 800A. Rough, for Hose

SCREWED FOR IRON PIPE, WITH SHOULDER
Lever Handle

No. 800

Size	inches	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Rough	per doz.	\$20.40	\$21.00	\$29.40	\$36.00	\$52.80	\$ 89.40	\$149.40	\$258.00
Finished	per doz.	25.20	25.80	35.40	45.00	64.80	107.40	179.40	300.00

No. 800A

Size	inches	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Rough, for Hose	per doz.	.....	\$24.00	\$32.40	\$39.00	\$60.00	\$100.20	\$164.40	\$280.20
Finished, for Hose	per doz.	.....	28.80	38.40	48.00	72.00	118.20	194.40	322.20

The above Bibbs, screwed for iron pipe, can be made to order without shoulder, at same list prices as above.

COMPRESSION BIBBS



Fig. 802. Finished

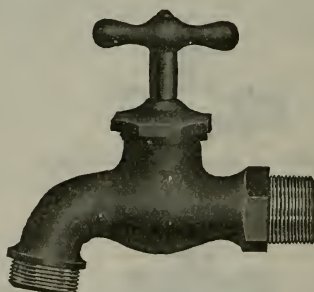


Fig. 802A. Rough, for Hose

SCREWED FOR IRON PIPE, WITH SHOULDER

No. 802

Size	inches	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1
Rough	per doz.	\$16.80	\$17.40	\$22.80	\$30.60	\$54.00
Finished	per doz.	18.60	19.80	25.20	33.00	60.00

No. 802A

Size	inches	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1
Rough, for Hose	per doz.	.....	\$20.40	\$25.80	\$33.60	\$61.20
Finished, for Hose	per doz.	.....	22.80	28.20	36.00	67.20

The above Bibbs, screwed for iron pipe, can be made to order without shoulder, at same list prices as above.

STEAM GAUGE COCKS

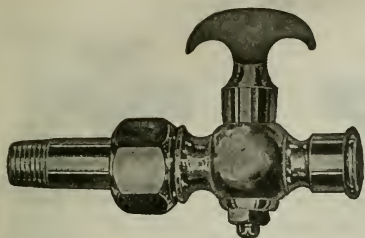


Fig. 742

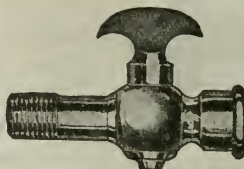
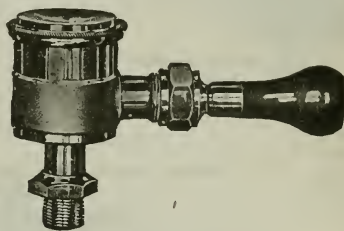


Fig. 744

No. 742.	Size, $\frac{1}{4}$ inch, with union, male and female.....	each	1.75
No. 744.	Size, $\frac{1}{4}$ inch, male and female.....	each	.75

HAND CYLINDER OIL PUMPS

Figs. 3, 04, 4 and 5
To go on side of cylinder or steam chest.Figs. 03, 6 and 7
To go on top of cylinder or steam chest.

Description	With Screw Top or Strainer Top	Size	Ca- pacity Pints
No. 3, finished....each	3.50	2x2	$\frac{1}{4}$
No. 04, finished....each	5.00	$2\frac{3}{4}$ x $2\frac{3}{4}$	$\frac{1}{2}$
No. 4, finished....each	7.50	$3\frac{1}{2}$ x $3\frac{1}{2}$	1
No. 5, finished....each	12.00	7 x $4\frac{1}{2}$	3

Description	With Screw Top or Strainer Top	Size	Ca- pacity Pints
No. 03, finished....each	3.50	2x2	$\frac{1}{4}$
No. 6, finished....each	5.00	$2\frac{3}{4}$ x $2\frac{3}{4}$	$\frac{1}{2}$
No. 7, finished....each	7.50	$3\frac{1}{2}$ x $3\frac{1}{2}$	1

All the above pumps will be furnished with screw top and $\frac{3}{4}$ inch iron pipe thread shank, unless otherwise ordered.

LEVER HANDLE OIL PUMPS

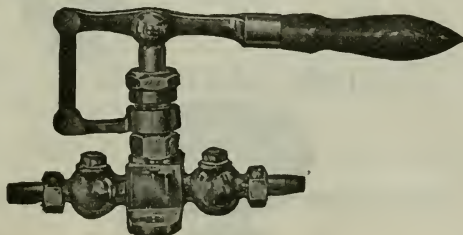


Fig. 748

These pumps are used to force oil into engine cylinders.

The arrangement is simple. The working parts consist of a plunger and two check valves, one check valve to permit the oil to be drawn into the pump, the other to allow it to be forced into the cylinder. We have found them more practical than other pumps, especially when graphite or plumbago is to be used with the oil.

These pumps are finished and highly polished and are fitted with $\frac{1}{4}$ inch union pipe connection both openings. They can be bolted to any convenient place, by means of the projecting lips at the base.

Priceeach \$20.00

SPRING KEY COCKS



Fig. 177
Spring Key Cock with
Tee Handle



Fig. 174
Spring Key Cock with Lever
Handle, Double Male End



Fig. 175
Spring Key Cock, with Tee
Handle, Bibb Nose

FOR AIR, GASOLINE, ETC.

The keys are self-adjusting, the springs taking up wear. The shank being uniform the key is easily turned and it will not stick as is often the case with the old style.

Fig. 177, T Handle, Male End

$\frac{1}{8}$ inch	each	\$0.78
$\frac{1}{4}$ inch	"	.90
$\frac{3}{8}$ inch	"	1.20
$\frac{1}{2}$ inch	"	1.56

Fig. 178, L Handle, Male End
Not illustrated

$\frac{1}{8}$ inch	each	\$0.84
$\frac{1}{4}$ inch	"	1.08
$\frac{3}{8}$ inch	"	1.38
$\frac{1}{2}$ inch	"	1.86

Fig. 174, L Handle, Double Male End

$\frac{1}{8}$ inch	each	\$1.02
$\frac{1}{4}$ inch	"	1.32

$\frac{3}{8}$ inch	each	\$1.80
$\frac{1}{2}$ inch	"	2.40

Fig. 175, T Handle, Bibb Nose

$\frac{1}{8}$ inch	each	\$1.02
$\frac{1}{4}$ inch	"	1.08
$\frac{3}{8}$ inch	"	1.56
$\frac{1}{2}$ inch	"	1.98

Fig. 176, L Handle, Bibb Nose
Not illustrated

$\frac{1}{8}$ inch	each	\$1.08
$\frac{1}{4}$ inch	"	1.20
$\frac{3}{8}$ inch	"	1.80
$\frac{1}{2}$ inch	"	2.28

WIND MILL TANK VALVES

SIZES AND PRICES

Size Pipe	Fig. 998	Fig. 999
$\frac{3}{4}$ inch	\$1.25	\$1.25
1 inch	1.38	1.40
1 $\frac{1}{4}$ inch	1.50	1.50
1 $\frac{1}{2}$ inch	3.00	3.00
2 inch	5.00	5.00
2 $\frac{1}{2}$ inch	7.50	7.50
3 inch	10.00	10.00



Fig. 998



Fig. 999

COPPER TANK FLOATS

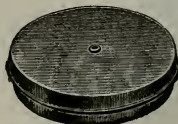


Fig. 778

Can be bolted to a lever attached to tank valve to open and close automatically.

	Size inches	Price Each
No. 1	12x3	\$1.50
No. 2	9 $\frac{1}{2}$ x 2 $\frac{3}{4}$	1.10

FISHER PUMP
GOVERNOR

SCREWED

$\frac{1}{2}$ inch.....	each	\$25.00
$\frac{3}{4}$ inch.....	"	27.50
1 inch.....	"	30.00
1 $\frac{1}{4}$ inch.....	"	35.00
1 $\frac{1}{2}$ inch.....	"	42.50
2 inch.....	"	50.00
2 $\frac{1}{2}$ inch.....	"	58.00
3 inch.....	"	70.00

FLANGED

1 $\frac{1}{2}$ inch.....	each	\$45.00
2 inch.....	"	50.00
2 $\frac{1}{2}$ inch.....	"	60.00
3 inch.....	"	75.00
3 $\frac{1}{2}$ inch.....	"	87.50
4 inch.....	"	100.00
5 inch.....	"	125.00
6 inch.....	"	150.00
8 inch.....	"	225.00



Fig. 453

LOW PRESSURE
BRASS SAFETY
VALVES

WITH IRON BALL

Ball Weighted for 8 to 10
Pounds Pressure

$\frac{3}{4}$ inch.....	each	\$2.60
1 inch.....	"	3.30
1 $\frac{1}{4}$ inch.....	"	4.50
1 $\frac{1}{2}$ inch.....	"	6.35
2 inch.....	"	8.65



Fig. 38

STANDARD SAFETY VALVES



Fig. 297

ANGLE AND CROSS. BRASS
For Steam Working Pressures up to 100 Pounds

SCREWED

Size	inches	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3
No. 40 Cross Safety Valve.....	each	\$2.20	2.50	3.25	3.90	4.70	7.15	9.00	12.50	22.50	33.50
No. 42, Angle Safety Valve	each			3.25	3.90	4.70	7.15	9.00	12.50		

Levers are graduated from 40 to 100 pounds. If desired, we can supply with any other graduation to order, not to exceed 100 pounds, at a special price.

Cross Safety Valves, sizes 1 $\frac{1}{4}$ inch and larger, will be furnished in Iron, unless Brass is specified.

LOW PRESSURE DAMPER REGULATOR



Fig. 234

Price	each	\$5.00
Extra Regular Rubber Diaphragm	each	.75
Extra Special Pressed Rubber Diaphragm	each	.75

STANDARD PRESSURE REGULATORS

For Steam, also Water or Air when so Specified



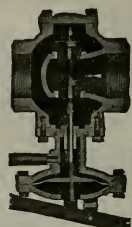
Fig. 971



Fig. 972



Fig. 973

Fig. 974
Marine TypeFig. 975
Low Pressure
TypeInterior View
Piston Type

No. 971 Regulators are for general service and used where the duty is steady on the reduced pressure side.

No. 972 Regulators are the same as No. 971 with the addition of Dash Pot, which prevents noise or chattering when duty on the reduced pressure side is varying, due to the quick opening and closing of valves, or the pulsation of pressure, as in the steam pipe of engines or pumps, or the exhaust of high speed engines.

No. 973 Regulators have expanded outlet, allowing steam to expand quickly and decrease in velocity. These valves are especially adapted to conditions requiring large volumes of steam, reduced noiselessly from comparatively high to very low pressures for steam heating and other purposes. Expanded outlet valves of the 975 low pressure type for use on low pressure and vacuum heating systems, are also furnished in corresponding sizes and numbered 975½.

Nos. 971, 972 and 973 Regulators are suitable for initial steam working pressures up to 200 lbs.

No. 974 Regulators (marine type) are fitted with very heavy working parts to withstand high steam pressures up to 250 lbs. They have sliding ball weights with set screws, instead of loose weights, and are especially adapted for marine and all high pressure service.

No. 975 Low Pressure Regulators are principally used for steam heating purposes and intended for low pressure service only. Their operation is very sensitive and positive and is governed entirely by the pressure existing in the low pressure main, which acts directly on the diaphragm, by means of the small size pipe connection. The lever is fitted with an adjustable regulating weight on each end. These Regulators are also furnished in the expanded outlet type, No. 975½, for extremely low pressure or vacuum systems.

When ordering, be particular to state size and style number, whether screwed or flanged; also give boiler pressure and pressure desired on reduced side; state what purpose Regulator is for, and whether same is to be used on steam, water or air.

Size Inches	No. 971 Screwed or Flanged Each	Nos. 972 and 974 Screwed or Flanged Each	No. 975 Screwed or Flanged Each	Size Inches	No. 973 Ex- panded Outlet Each	No. 975½ Expanded Outlet Not Illus. Each	Diam. of Standard Flanges Inches	Diam. of Extra Heavy Flanges Inches
½	18.00	22.00	26.00	1x2	35.00	40.00		
¾	20.00	24.00	26.00	1½x2½	40.00	50.00		
1	22.00	26.00	28.00	1½x3	48.00	60.00		
1¼	24.00	28.00	32.00	2x3	54.00	70.00		
1½	25.00	30.00	35.00	2x4	60.00	80.00		
2	30.00	36.00	40.00	2½x5	80.00	90.00	6	6½
2½	35.00	42.00	50.00	3x5	90.00	110.00	7	7½
3	40.00	48.00	60.00	3x6	100.00	130.00	7½	8½
3½	50.00	60.00	70.00	3½x7	110.00	160.00	8½	9
4	60.00	72.00	80.00	4x6	110.00	160.00	9	10
5	75.00	90.00	105.00	4x7	130.00	175.00	10	11
6	100.00	120.00	140.00	4x8	160.00	190.00	11	12½
7	135.00	160.00	190.00	5x8	170.00	210.00	12½	14
8	175.00	200.00	230.00	5x9	220.00	230.00	13½	15
10	275.00	300.00	290.00	5x10	235.00	260.00	16	17½
12	400.00	435.00	360.00	6x8	220.00	280.00	19	20
14	500.00	600.00		6x10	250.00	300.00	21	22½
				6x12	335.00	320.00		
				8x12	400.00	350.00		
				8x14	430.00	400.00		
				8x16	475.00	450.00		
				10x16	650.00	600.00		
				10x20	700.00	650.00		

The 1½-Inch and smaller Regulators are made of all brass; the 2-Inch and larger have iron bodies and brass trimmings.

The 1½-Inch and smaller Regulators have screwed ends only; 2 to 6 Inch, made either with screwed or flanged ends; larger sizes made with flanged ends only.

Unless otherwise specified, screwed Regulators up to and including 6-Inch will be sent, and in all cases when the style is not given, No. 971 will be furnished.

When flanged Regulators are ordered, we will always furnish with standard diameter flanges, and not drilled, unless otherwise specified. Extra heavy diameter flanges will be furnished when so specified, without extra charge. Drilling flanges will be at an extra price.

LOW PRESSURE BRASS POP SAFETY VALVES

For Steam Heating Boilers

Set at any Pressure Specified up to 20 lbs.

These Valves are made of brass, with a strong and durable base, and are fitted with best steel springs.

In addition to their extensive use on steam heating boilers, they are also useful on boiling kettles, tanks, etc.

The outlet holes on all sizes of these Valves are located to blow "downward."

In localities where Boiler Inspector Seal is required and so specified, we will furnish these Valves with lug cast on body and corresponding holes drilled through this lug and the hexagon corners of cap, for attaching wire and seal.

When not otherwise specified we will furnish No. 1160 rough body Valves set at 10 lbs.



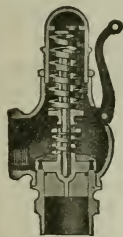
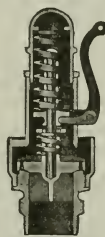
Fig. 1160



Fig. 1162

Size	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
No. 1160, rough body	each	\$5.25	\$5.25	\$6.00	\$6.75	\$8.25	\$11.25	\$26.00	\$37.50
No. 1162, finished	each	6.00	6.00	6.75	7.75	9.50	13.00	28.00	41.00
No. 1164, finished and nickel plated	each	6.75	6.75	7.50	8.75	10.50	14.00	30.00	44.00

STANDARD BRASS POP SAFETY VALVES

Fig. 1144
InteriorFig. 1144
ExteriorFig. 1146
LockedFig. 1148
InteriorFig. 1148
ExteriorFig. 1150
Locked

WITH SELF-ADJUSTING "POP" REGULATOR—PATENTED

For Stationary Boilers

Set at any Pressure Specified up to 250 lbs.

Nos. 1146 and 1150 are furnished with lock-up attachment but no lock. Locks will be furnished when ordered at an extra price.

Valves with special enlarged or reduced inlets for threshing engines, made to order at a special price, according to quantity wanted.

PRICE LIST FOR STATIONARY BOILERS

Size inches	No. 1144 Price each	No. 1146 Price each	No. 1148 Price each	No. 1150 Price each	For Nominal Boilers H. P.	Valve Area Square inches
3/4	11.00	12.00	8.00	\$9.00	6	0.196
1	11.00	12.00	8.00	9.00	6	0.441
1 1/4	13.00	14.00	10.00	11.00	10	0.785
1 1/2	16.00	17.00	12.00	13.00	20	1.227
2	19.00	21.00	15.00	17.00	30	1.767
2 1/4	29.00	31.00	23.00	25.00	40	3.141
2 1/2	38.00	40.00	31.00	33.00	55	3.976
3	46.00	49.00	38.00	40.00	70	4.908

When ordering, always specify style number, and state the pressure at which valves are wanted set to blow off.

*The 2 1/4 inch Valve has regular 2 1/2 inch pipe connections.

STANDARD BRASS WATER, CYLINDER AND SNIFFING RELIEF VALVES



Fig. 1126



Fig. 1138



Fig. 1128



Fig. 1130 HYD.



Fig. 1132



Fig. 1134

FOR PUMPS, STEAM ENGINE CYLINDERS, PIPE LINES,
TANKS, HYDRAULIC PRESSES AND ELEVATORS

No. 1126 is intended for use as water or Cylinder Relief Valves. Sizes 2½ and smaller will be set at any pressure specified up to 250 lbs. and sizes 3, 3½, and 4 will be set at any pressure specified up to 200 lbs.

No. 1138 is the No. 1126 Valve fitted with lock-up attachment but no lock. Locks furnished when order at an extra price, see index. Where boiler inspector seal is required, suitable holes are drilled for attaching wire and seal in place of the lock and pin.

No. 1128 will be set at any pressure specified up to 500 lbs. This style Valve is furnished with female base. When otherwise required, or flanged, will be made to order at a special price.

No. 1130 Hydraulic Valve will be set at any pressure specified up to 5000 lbs., (according to size) and furnished as shown in cut, unless otherwise specified. These Valves are made extra heavy, of a superior composition, with long and durable springs of best quality steel. They have found extensive use for all purposes where prompt and efficient relief is required in connection with extremely high pressure service, such as Hydraulic Presses, High Pressure Pumping Systems, Hydraulic Elevators, Pipe Lines, etc. **Prices on application.**

No. 1132 and No. 1134 Cylinder Relief or Snifting Valves, sizes 2½ and smaller, will be set at any pressure specified up to 250 lbs. Sizes 3, 3½ and 4 will be set at any pressure up to 200 lbs.

PRICE LIST

[illegible]

STANDARD POP SAFETY VALVES

(CRANE PATENT)

FOR STATIONARY BOILERS

Iron Body. Brass or Nickel Seat
Set at Any Pressure Specified up to 250
Pounds

When ordering, always specify the style number
of valve, and state the pressure at which valves are
wanted set to blow off.

When not otherwise specified, No. 1101 Valve with
brass seat will be furnished.

Fig. 1101
PLAIN SPRING TYPE

Fig. 1105
ENCASED SPRING TYPE

PRICE LIST

DIMENSIONS

Size Inches	No. 1101		No. 1105		Diam- eter of Base Flange Inches	Diameter of Outlet Flange Inches	Center of O'let to B'm of Base Flange In	Center of Valve to End of Outlet Inches	Total Height Inches	For Boilers Nom'l H. P.
	With Brass Seat Each	With Nickel Seat Each	With Brass Seat Each	With Nickel Seat Each						
2½	42.00	48.00	57.00	63.00	7½	8½	5¾	3¾	16¾	70
3	50.00	57.00	68.00	75.00	8¾	9	5¾	4¾	17¾	100
3½	68.00	75.00	88.00	95.00	9	10	6¾	4¾	20¾	125
4	75.00	87.00	98.00	110.00	10	11	6¾	5	21¾	150
4½	100.00	115.00	125.00	140.00	10½	11½	7¾	6	22¾	175
5	120.00	135.00	150.00	165.00	11	12	7¾	7¾	23¾	200
6	170.00	190.00	210.00	230.00	12½	13	8¾	8¾	25¾	300

In localities where Boiler Inspector Seal is required, and so specified, we drill an extra hole in the Stem Pin at top of Valve, for attaching the wire and seal. This at no extra charge.

STANDARD POP SAFETY VALVES

(CRANE PATENT)

TWIN PATTERN FOR STATIONARY BOILERS

Iron Body. Brass or Nickel Seat
Set at Any Pressure Specified up to 250 Pounds

PRICE LIST. TWIN PATTERN

No. 1103 comprises two No. 1101 Plain Spring Valves mounted on Y Base.

No. 1107 comprises two No. 1105 Encased Spring Valves, locked up, mounted on Y Base.

Size Inches	No. 1103		No. 1107	
	With Brass Seat Each	With Nickel Seat Each	With Brass Seat Each	With Nickel Seat Each
2½	118.00	130.00	148.00	160.00
3	142.00	156.00	178.00	192.00
3½	186.00	200.00	226.00	240.00
4	210.00	234.00	256.00	280.00
4½	230.00	260.00	340.00	370.00
5	350.00	380.00	410.00	440.00
6	470.00	510.00	550.00	590.00

DIMENSIONS

Size Inches	Size Inlet of Y Base Inches	Diam. of Y Base Flange Inches	Largest Diameter of Y Base Inches	Center of Outlet to Bottom of Y Base Flange Inches	Total Height Inches	For Boilers Nom'l H. P.
2½	3¼	9	15¼	13	24	140
3	4¼	10½	16¾	14¼	26¼	200
3½	5	11	18¾	15 3/16	29¾	250
4	6	12½	20¾	16 7/16	31	300
4½	7	14	21¾	17¾	32¾	350
5	7	14	22¾	18¾	34¼	400
6	8¼	15	25¾	21	38¾	600

Fig. 1103

Fig. 1107

When ordering, always specify the style number and state the pressure at which valves are wanted set to blow
When not otherwise specified, No. 1103 twin type with brass seats will be furnished.

The above prices include two Valves and corresponding Y Base all bolted together as shown in cuts.

MARINE POP SAFETY VALVES

ESSENTIAL FEATURES

Bevel Seats at an angle of 45 degrees, brass or with solid nickel bushing as required.
The Cam Lever will lift the Valve off its seat one-eighth the diameter of Valve opening.
The Cam Lever may be thrown over far enough to lock the Valve open, should occasion require.

The Cap is made with handle or cross-bars, fastened to stem and secured to main Valve, providing means for locking the Valve on its seat when steam is on, to remove any incrustation or saline matter that may accumulate.

No. 1109 LOCKED UP MARINE POP SAFETY VALVES

Comply with all the requirements of the United States Board of Supervising Inspectors of Steam Vessels and will be passed by all Local Inspectors on the basis of Valve Area Formula as prescribed (Rule II, Section 26) in the General Rules and Regulations as amended January, 1909, and approved by the Secretary of the Department of Commerce and Labor, March 20, 1909.

The above Amended Rule of the U. S. Steamboat Inspection Service (issued by the Department of Commerce and Labor) supplies a formula which gives the required Valve Area in square inches, based on pounds of water evaporated per hour per square foot of grate surface, as represented by figures given in a rated table of evaporation under different pressures of steam.

When ordering, always specify the style number of valve and state the pressure Valves are wanted set to blow off, also whether brass or nickel seat.

Valves with brass seat will always be furnished unless nickel seat is specified. These Valves are furnished locked up.

Unless otherwise specified, these Valves will be furnished with flanged inlet and flanged outlet, and of the dimensions as given above.

An additional charge will be made for special-diameter flanges. Drilling extra.

Templates for drilling should always accompany orders, otherwise we will drill the base (inlet) flange according to extra heavy templates, and the outlet flange according to standard templates. The 5½ inch Valves will be drilled same as 6 inch templates.

Hexagon screwed base or screwed outlet will be furnished, when so ordered, without extra charge.
*When screwed outlet is called for on 5½-inch Valve, thread will be cut for 5-inch pipe.

IRON BODY. BRASS OR NICKEL SEAT

Set at Any Pressure Specified up to 250 Pounds

Special Valves Made to Order for Pressures Above 250 Pounds

Size Inches	Diameter of Base Flange Inches	Center of Outlet to Bottom of Base Flange Inches	Diameter of Outlet Flange Inches	Center of Valve to End of Outlet Inches	Total Height Inches	Valve Area Square Inches	With Brass Seat Each	With Nickel Seat Each
2½	7½	5¼	7	4¾	17½	4.908	\$ 75.00	\$ 81.00
3	8¼	5¾	7½	5¼	19½	7.068	90.00	97.00
3½	9	6¾	8½	5¾	21¼	9.621	115.00	122.00
4	10	6½	9	6¾	22¾	12.566	125.00	137.00
4½	10½	7½	9½	7¾	24¾	15.904	160.00	175.00
5	11	7¾	10	7¾	25¾	19.635	200.00	215.00
*5½	12½	8	*10	7¾	27¾	23.758	235.00	250.00
6	12½	8½	11	8¾	28¾	28.274	275.00	295.00

THROTTLE VALVES

Iron Body. Brass Mounted

For Steam Working Pressures up to 125 Pounds

Full opening in one-quarter turn.

Size	.....Inches	2½	3	3½	4
Price, Screwed	.....Each	30.00	40.00	50.00	60.00
End to End	.....Inches	7½	8	8½	9¾

CARPENTER SERVICE

A shutdown or breakdown in any industrial plant is an expensive event. The chief concern of the operator is the interruption of his daily production and the forced idleness of both his help and equipment. His first thought is for the rapid repair of the damage and he usually insists on speed all the way down the line.

If you want anything in a hurry, or your plant is tied up for the lack of an important part that will make the wheels turn again, send us a wire, or better still, call us on the long distance telephone. The chances are that we have in stock what you want. If so, the first train out will have your goods on it.



Fig. 382

"KEWANEE" UNIONS

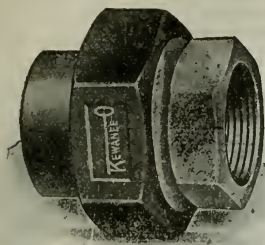
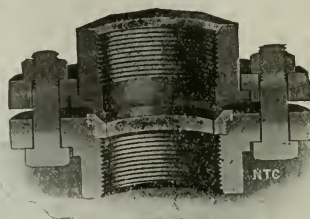


Fig. H303

Fig. H313
Note Brass Seat Screwed In

"KEWANEE" UNIONS—HEXAGON PATTERN
COMBINATION BRASS AND IRON GROUND BALL JOINT
Fig. H303

No gasket required. Non-corrosive thread connection. Each Union tested with extreme air pressure under water. Suitable for steam working pressures up to 200 pounds.

Size	inches	1/4	1/4	3/4	1/2	3/4	1	1 1/4
Black	each	\$0.18	.19	.22	.27	.40	.48	.66
Galvanized	each	.22	.23	.26	.34	.49	.60	.82
Size	inches	1 1/2	2	2 1/2	3	3 1/2	4	....
Black	each	\$0.80	1.14	2.10	2.65	4.30	5.50	....
Galvanized	each	1.10	1.40	2.75	3.50	6.30	7.50	....

"KEWANEE" UNIONS—OCTAGON PATTERN
COMBINATION BRASS AND IRON GROUND BALL JOINT
Not illustrated

No gasket required. Non-corrosive thread connection. Each Union tested with extreme air pressure under water. Suitable for steam working pressures up to 200 pounds.

"The Union with no Inserted Parts."

Size	inches	1/4	1/4	3/4	1/2	3/4	1	1 1/4
Black	each	\$0.18	.19	.22	.27	.40	.48	.66
Galvanized	each	.22	.23	.26	.34	.49	.60	.82
Size	inches	1 1/2	2	2 1/2	3	3 1/2	4	....
Black	each	\$0.80	1.14	2.10	2.65	4.30	5.50	....
Galvanized	each	1.10	1.40	2.75	3.50	6.30	7.50	....

"KEWANEE" FLANGE UNIONS
BRASS AND MALLEABLE IRON SELF-SEATING BALL JOINT
Fig. H313

No gasket required. Each Union tested with air pressure under water. Suitable for steam working pressures up to 125 pounds.

Size	inches	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
Black	each	\$0.80	1.20	1.60	2.00	3.20	4.80	6.00	7.50
Galvanized	each	1.20	1.80	2.40	3.00	4.80	7.20	9.00	11.25
Size	inches	4 1/2	5	6	7	8	9	10	....
Black	each	\$8.75	10.00	12.50	15.00	18.00	21.60	28.80	....
Galvanized	each	13.00	15.00	18.75	22.50	27.00	32.40	43.20	....

"KEWANEE" UNIONS—ROUND END PATTERN
COMBINATION BRASS AND IRON GROUND BALL JOINT
Not illustrated

No gasket required. Non-corrosive thread connection. Each Union tested with extreme air pressure under water. Suitable for steam working pressures up to 200 pounds.

Size	inches	1/4	1/4	3/4	1/2	3/4	1	1 1/4
Black	each	\$0.18	.19	.22	.27	.40	.48	.66
Galvanized	each	.22	.23	.26	.34	.49	.60	.82
Size	inches	1 1/2	2	2 1/2	3	3 1/2	4	....
Black	each	\$0.80	1.14	2.10	2.65	4.30	5.50	....
Galvanized	each	1.10	1.40	2.75	3.50	6.30	7.50	....

FOR PIPE, MONKEY AND SPECIAL WRENCHES, SEE INDEX

STANDARD BRASS UNIONS—COPPER TUBING

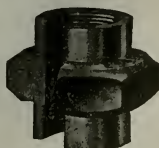
Ground Joint. No Gasket Required

FOR STEAM WORKING PRESSURES

Sizes 3 Inch and Smaller, up to 200 Pounds

Sizes 3½ Inch and 4 Inch, up to 125 Pounds

No. 521½ Rough Brass Unions are not Recommended for Steam Working Pressures Above 150 Lbs.

Fig. 521½
RoughFig. 522
Semi-finishedFig. 523
FinishedFig. 523½
Octagon Ends
Govt. Pattern, Rough

STANDARD BRASS UNIONS

Size	inches	¾	¾	¾	¾	¾	1	1¼	1½	2	2½	3	3½	4
Brass Unions, rough, No. 521½		.50	.65	.85	1.15	1.60	2.25	2.70	4.00	7.50	11.50			
Brass Unions, semi-finished, No. 522		.45	.55	.75	.95	1.30	1.75	2.50	3.00	4.50	8.25	12.75	22.50	30.00
Brass Unions, finished, No. 523		.50	.60	.85	1.05	1.40	1.90	2.75	3.25	5.00	9.00	14.00	25.00	33.00
Octagon Brass Un's, rough, No. 523½			.65	.85	1.10	1.50	2.00	2.80	3.60	5.25	9.00	14.00		

Finished and nickel plated unions will be furnished at an advance of 20 per cent over above Finished prices.

SEAMLESS DRAWN BRASS AND COPPER TUBING
IRON PIPE SIZES

Size inches	Dimensions		Approximate Weights	
	Inside Diameter inches	Outside Diameter inches	Brass Per Lineal Foot pounds	Copper Per Lineal Foot pounds
¾	.281	.405	.25	.26
¾	.375	.540	.43	.45
¾	.494	.675	.62	.65
½	.625	.840	.90	.95
¾	.822	1.05	1.25	1.31
1	1.062	1.315	1.70	1.79
1¼	1.368	1.66	2.50	2.63
1½	1.600	1.90	3.00	3.15
2	2.062	2.375	4.00	4.20
2½	2.500	2.875	5.75	6.04
3	3.062	3.50	8.30	8.72
3½	3.500	4.00	10.90	11.45
4	4.000	4.50	12.70	13.33
4½	4.500	5.00	13.90	14.60
5	5.062	5.563	15.75	16.54
6	6.125	6.625	18.31	19.23
7	7.062	7.625	26.28	27.60
8	7.982	8.625	29.88	31.37

EXTRA HEAVY

¾	.205	.405	.370	.388
¾	.294	.540	.625	.650
¾	.421	.675	.830	.870
½	.542	.840	1.200	1.33
¾	.736	1.050	1.660	1.75
1	.951	1.315	2.360	2.478
1¼	1.272	1.660	3.300	3.465
1½	1.494	1.900	4.250	4.462
2	1.933	2.375	5.460	5.733
2½	2.315	2.875	8.300	8.715
3	2.892	3.500	11.200	11.760
3½	3.358	4.00	13.700	14.385
4	3.818	4.50	16.500	17.325
5	4.813	5.563	23.800	23.940
6	5.750	6.625	32.00	33.60

Furnished with plain ends, unless otherwise specified. Commercial lengths are 12 feet long.

PRICES ON APPLICATION

GAUGE TUBING

Price of seamless or brazed tubing, of diameters ¼ inch to 10 inch and any gauge in which the different diameters are made, will be quoted on request, for direct shipment from mill.

BRASS STEAM FITTINGS



Fig. 181A



Fig. 181B



Fig. 181C

IRON PIPE SIZE—ROUGH
For 125 Pounds Working Pressure

Size	inches	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
Elbows	each	.12	.15	.20	.28	.40	.63	.90	1.20	2.00	3.50	6.00	8.00	10.00
Elbows, Reducing	each		.19	.25	.35	.50	.80	1.10	1.50	2.50	4.25	7.50	10.00	12.50
Elbows, 45°	each	.16	.20	.25	.31	.40	.63	.90	1.20	2.00	3.50	6.00		10.00
Elbows, Street	each	.25	.27	.33	.48	.63	.85	1.50	2.00	3.25				
Elbows, Drop, Female	each		.35	.45	.65	1.05	1.50	2.00	3.40					
Elbows, Side Outlet	each			.60	.85	1.20	1.90	2.75	3.60	6.00	10.50	18.00		
Tees	each	.17	.21	.28	.40	.55	.85	1.25	1.70	2.80	5.00	8.50	11.00	14.00
Tees, Reducing	each		.25	.35	.50	.70	1.05	1.55	2.10	3.50	6.25	10.50	14.00	17.50
Tees, Drop, Female	each			.43	.57	.80	1.25							
Tees, 4-way	each				1.20	1.65	2.50	3.75	5.00	8.50				
Crosses	each	.25	.30	.40	.55	.80	1.25	1.80	2.40	4.00	7.00	12.00	16.00	20.00
Crosses, Reducing	each		.38	.50	.70	1.00	1.55	2.25	3.00	5.00	8.75	15.00	20.00	25.00
Bushings	each		.10	.12	.15	.22	.35	.50	.70	1.00	1.50	2.50	3.75	6.00
Faced Bushings	each		.12	.15	.19	.27	.44	.62	.87	1.25	1.85	3.10	4.75	6.25
Plugs	each	.08	.10	.12	.15	.20	.30	.45	.60	.95	1.50	2.25	3.75	5.00
Solid Plugs	each		.18	.22	.30	.45	.80	1.20	1.90	3.00	4.50	7.50	10.00	
Countersunk Plugs	each			.22	.30	.45	.85	.65	.90	1.40				
Caps	each	.10	.13	.16	.20	.30	.42	.60	.80	1.25	2.50	3.50	5.50	7.00
Lock-nuts	each	.10	.10	.12	.15	.20	.28	.40	.55	.80	1.75	2.75	4.00	5.00
Reducers	each		.15	.20	.28	.40	.60	.90	1.10	1.75	2.75	4.00	6.00	8.00
Couplings	each	.10	.13	.17	.25	.37	.55	.80	1.00	1.60	2.50	3.50	5.25	7.00
Couplings, R. & L.	each		.17	.22	.30	.45	.70	1.00	1.30	2.00	3.10	4.50		
Return Bends, Close	each				.70	1.00	1.25	1.80	2.50	4.25				
Return Bends, Open	each				.80	1.10	1.40	2.15	3.00	4.75	8.25	11.00		
Y Bends	each				.75	1.10	1.65	2.50	3.30	5.50	9.50	16.00		26.00

Right and Left Elbows, Right and Left Return Bends, also Bushings and Reducers, reducing more than two sizes, will be furnished at an advance of 25 per cent over above prices.

BRASS STEAM FITTINGS

IRON PIPE SIZE—FINISHED

For 125 Pounds Working Pressure

Size	inches	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
Elbows	each	.30	.35	.45	.66	.75	1.10	1.55	2.00	3.00	5.50	9.00	14.00	17.50
Elbows, Reducing	each		.44	.55	.70	.95	1.40	1.90	2.50	3.75	6.75	11.25	17.50	22.00
Elbows, 45°	each	.38	.45	.55	.66	.85	1.23	1.70	2.20	3.25	6.00	9.75		19.50
Elbows, Street	each	.47	.52	.63	.83	1.08	1.45	2.30	3.00	4.50				
Elbows, Drop, Female	each		.85	1.05	1.40	2.00	2.80	3.60	5.40					
Elbows, Side Outlet	each		1.35	1.70	2.25	3.30	4.70	6.00	9.00	16.50	27.00			
Tees	each	.42	.49	.63	.80	1.05	1.55	2.15	2.80	4.20	7.75	12.75	19.50	24.50
Tees, Reducing	each	.60	.77	1.00	1.30	1.85	2.65	3.50	5.25	9.75	15.80	24.50	30.50	
Tees, Drop, Female	each		1.13	1.37	1.80	2.55								
Tees, 4-way	each				2.05	2.70	3.90	5.70	7.40	11.50				
Crosses	each	.60	.70	.90	1.10	1.50	2.20	3.10	4.00	6.00	11.00	18.00	28.00	35.00
Crosses, Reducing	each		.88	1.10	1.40	1.85	2.75	3.85	5.00	7.50	13.75	22.50	35.00	44.00
Bushings	each		.22	.27	.35	.47	.70	1.00	1.40	2.00	3.00	4.50	6.25	8.00
Plugs	each	.23	.30	.37	.43	.65	.75	1.00	1.30	1.95	3.00	4.25	6.25	8.00
Solid Plugs	each		.43	.50	.65	.90	1.35	1.90	2.90	4.50	6.50	10.00	13.00	
Countersunk Plugs	each			.42	.55	.80	1.15	1.55	2.25					
Caps	each	.20	.25	.31	.40	.55	.77	1.10	1.50	2.25	4.00	5.50	8.00	10.00
Lock-nuts	each	.24	.25	.32	.40	.50	.65	.85	1.10	1.60	3.25	4.75	6.50	8.00
Reducers	each		.35	.45	.56	.75	1.05	1.55	1.90	2.75	4.75	7.00	12.00	15.50
Couplings	each	.24	.28	.36	.46	.63	.90	1.30	1.60	2.35	4.00	6.75	9.75	12.50
Couplings, R. & L.	each		.37	.47	.58	.80	1.15	1.65	2.10	3.00	5.10	7.50		
Return Bends, Close	each				1.55	2.05	2.65	3.75	4.90	7.25				
Return Bends, Open	each				1.65	2.15	2.80	4.10	5.40	7.75	14.25	20.00		
Y Bends	each				1.60	2.15	3.05	4.45	5.70	8.50	15.50	25.00		41.00

Right and Left Elbows, Right and Left Return Bends, also Bushings and Reducers, reducing more than two sizes, will be furnished at an advance of 25 per cent over above prices.

WROUGHT IRON NIPPLES

TABLE OF SIZES AND LENGTHS
KEPT IN STOCK

Fig. 162A. Close

Nipples larger than 12 inch, made to order
and charged as cut pipe, and threads extra.

Fig. 162B Shoulder

Length, inches						Size, inches	Prices		Price of Extra Long Nipples												
Close	Short	Long					Close or Short	Long	inches												
									4	5	6	7	8	9	10	11	12				
$\frac{3}{8}$	1½	2	2½	3	3½	$\frac{7}{8}$	.04	.06	.07	.08	.10	.12	.14	.15	.17	.18	.19			
$\frac{3}{8}$	1½	2	2½	3	3½	$\frac{3}{4}$	.04	.06	.07	.08	.10	.12	.14	.15	.17	.18	.19			
1	1½	2	2½	3	3½	$\frac{9}{16}$	.04	.06	.07	.08	.10	.12	.14	.15	.17	.18	.19			
1½	1½	2	2½	3	3½	$\frac{1}{2}$	.05	.07	.08	.10	.12	.14	.16	.18	.20	.22	.23			
1½	2	2½	3	3½	4	$\frac{5}{8}$	.06	.09	.11	.13	.17	.18	.20	.22	.24	.26				
1½	2	2½	3	3½	4	1	.08	.13	.15	.18	.23	.25	.28	.31	.34	.36					
1½	2½	3	3½	4	4½	1½	.11	.17	.20	.24	.29	.33	.36	.40	.44	.47					
1½	2½	3	3½	4	4½	1½	.13	.20	.25	.29	.36	.40	.45	.50	.54	.59					
2	2½	3	3½	4	4½	2	.18	.27	.33	.38	.50	.54	.59	.65	.72	.77					
2½	3	3½	4	4½	5	2½	.39	.59	.68	.90	.97	1.06	1.17	1.26	1.35						
2½	3	3½	4	4½	5	3	.48	.72	.85	1.08	1.20	1.33	1.45	1.58	1.70						
2½	4	4½	5	5½	6	3½	.75	1.05			1.30	1.45	1.60	1.75	1.90	2.05					
2½	4	4½	5	5½	6	4	.85	1.20			1.52	1.69	1.87	2.05	2.22	2.40					
2½	4	4½	5	5½	6	4½	1.25	1.70			2.25	2.50	2.75	2.95	3.17	3.40					
3	4½	5	5½	6	6½	5	1.55	2.45			2.58	2.83	3.10	3.35	3.60	3.85					
3½	4½	5	5½	6	6½	6	1.85	2.90			3.05	3.35	3.70	4.00	4.30	4.65					
3½	5					7	3	2.0			3.60	4.05	4.45	4.90	5.30	5.75	6.15				
3½	5					8	3.55				4.05	4.55	5.05	5.50	6.00	6.50	7.00				
3½	5					9	5.25						6.50	7.10	7.75	8.40	9.00				
3½	5					10	6.75						8.25	8.90	9.70	10.40	11.15				
4½	5					12	8.00						10.00	10.80	11.75	12.70	13.65				

WROUGHT IRON NIPPLES—PLAIN, RIGHT AND LEFT

Length, inches						Size, inches	Prices		Price of Extra Long Nipples											
Close	Short	Long					Close or Short	Long	inches											
									4	5	6	7	8	9	10	11	12			
$\frac{3}{8}$	1½	2	2½	3	3½	$\frac{3}{8}$	.05	.08	.09	.11	.13	.16	.18	.20	.23	.25	.27		
$\frac{3}{8}$	1½	2	2½	3	3½	$\frac{3}{8}$	.05	.08	.09	.11	.13	.16	.18	.20	.23	.25	.27		
1	1½	2	2½	3	3½	$\frac{9}{16}$	.05	.08	.09	.11	.13	.16	.18	.20	.23	.25	.27		
1½	1½	2	2½	3	3½	$\frac{1}{2}$	.07	.10	.11	.13	.16	.18	.21	.24	.27	.29	.31		
1½	2	2½	3	3½	4	$\frac{5}{8}$	.08	.12	.15	.17	.23	.25	.27	.29	.32	.35			
1½	2	2½	3	3½	4	1	.11	.18	.20	.24	.31	.33	.37	.41	.45	.48				
1½	2½	3	3½	4	4½	1½	.15	.23	.27	.32	.39	.45	.50	.55	.60	.65				
1½	2½	3	3½	4	4½	1½	.18	.27	.34	.39	.48	.52	.60	.67	.72	.80				
2	2½	3	3½	4	4½	2	.24	.36	.43	.51	.67	.72	.80	.87	.96	1.03				
2½	3	3½	4	4½	5	2½	.52	.79	.81	1.20	1.30	1.40	1.55	1.68	1.80					
2½	3	3½	4	4½	5	3	.65	.96	1.13	1.44	1.60	1.77	1.93	2.10	2.27					
2½	4	4½	5	5½	6	3½	1.10	1.40				1.75	1.95	2.15	2.35	2.55	2.75			
3	4	4½	5	5½	6	4	1.15	1.60				2.00	2.25	2.50	2.75	3.00	3.25			

Add 60 per cent to above prices for Galvanized Right and Left Nipples.

WROUGHT IRON NIPPLES—GALVANIZED

Length, inches						Size, inches	Price		Prices of Extra Long Nipples												
Close	Short	Long					Close or Short	Long	inches												
									4	5	6	7	8	9	10	11	12				
$\frac{3}{8}$	1½	2	2½	3	3½	$\frac{3}{8}$	.06	.11	.12	.15	.17	.21	.24	.26	.29	.31	.34			
$\frac{3}{8}$	1½	2	2½	3	3½	$\frac{3}{8}$	.06	.11	.12	.15	.17	.21	.24	.26	.29	.31	.34			
1	1½	2	2½	3	3½	$\frac{9}{16}$	.06	.11	.12	.15	.17	.21	.24	.26	.29	.31	.34			
1½	1½	2	2½	3	3½	$\frac{1}{2}$	.06	.11	.13	.16	.18	.23	.26	.28	.31	.33	.36			
1½	2	2½	3	3½	4	$\frac{5}{8}$	.08	.14		.18	.21	.26	.29	.32	.35	.38	.41			
1½	2	2½	3	3½	4	1	.11	.19		.24	.28	.34	.38	.42	.47	.51	.55				
1½	2½	3	3½	4	4½	$\frac{1}{2}$	.17	.29		.32	.39	.45	.51	.57	.63	.69	.75			
1½	2½	3	3½	4	4½	$\frac{1}{2}$	.21	.35		.39	.46	.55	.63	.70	.77	.84	.91			
2	2½	3	3½	4	4½	2	.27	.47		.52	.61	.74	.83	.93	1.03	1.13	1.23				
2½	3	3½	4	4½	5	$\frac{3}{2}$	.56	.86		1.00	1.26	1.41	1.56	1.71	1.86	2.00	2.15			
2½	3	3½	4	4½	5	3	.70	1.10		1.30	1.60	1.80	2.00	2.20	2.40	2.60					
2½	4	4½	5	5½	6	$\frac{3}{2}$	1.20	1.70					2.10	2.35	2.60	2.85	3.15	3.40			
3	4	4½	5	5½	6	4	1.35	1.87					2.30	2.60	2.90	3.20	3.50	3.80			
3	4	4½	5	5½	6	4½	1.85	2.60					3.30	3.65	4.05	4.45	4.85	5.25			
3½	4½	5	5½	6	6½	5	2.30	3.15					3.75	4.20	4.60	5.00	5.40	5.85			
3½	4½	5	5½	6	6½	6	2.80	4.25					4.50	5.00	5.55	6.05	6.60	7.15			



STANDARD WROUGHT IRON COUPLINGS

Size of Pipe Ins.	Price Black Each	Price Galv. Each	Price Right and Left Black Each	Price Right Hand Faced Black Each	Price Right Hand Faced Galv. Each	Nom-inal Outside Diam-eter Inches	Length of Coup-ling Inches	Average Weight of Coup-ling Pounds	No. of Threads Per Inch of Screw
1/8	.05	.06				1 1/8	1 1/8	.03	27
1/4	.05	.06	.07	.09	.14	1 1/4	1 1/4	.07	18
3/8	.06	.08	.08	.10	.15	1 3/8	1 3/8	.11	18
1/2	.07	.10	.11	.12	.18	1 1/2	1 1/2	.15	14
3/4	.10	.13	.15	.16	.24	1 3/4	1 3/4	.25	14
1	.13	.18	.20	.22	.33	1 7/8	1 7/8	.42	11 1/2
1 1/4	.17	.25	.25	.30	.45	1 3/4	2 1/8	.60	11 1/2
1 1/2	.21	.32	.30	.40	.60	2 1/8	2 1/8	.81	11 1/2
2	.28	.40	.50	.50	.75	2 3/8	2 1/2	1.18	11 1/2
2 1/2	.40	.55	.85	.70	1.00	3 1/8	2 3/4	1.70	8
3	.60	.80	1.20	.90	1.35	3 1/2	3 1/8	2.45	8
3 1/2	.80	1.05	1.60	1.20	1.80	4 1/8	3 3/8	3.40	8
4	1.00	1.40	2.00	1.50	2.25	4 1/2	3 7/8	3.50	8
4 1/2	1.50	2.00		2.10		5 1/8	3 5/8	4.70	8
5	1.65	2.25		2.40		6 1/4	4 1/8	8.50	8
6	2.40	3.25		3.60		7 3/8	4 3/8	9.70	8
7	3.25					8 3/8	4 3/4	11.10	8
8	4.25					9 1/4	4 3/4	13.60	8
9	5.50					10 3/8	5 1/4	17.40	8
10	7.50					11 3/8	6 1/4	31.10	8
12	10.00					13 3/8	6 3/4	44.20	8

1 1/4 inch turned and faced Couplings to fit inside of 2 inch wrought pipe. Price on application.



Fig. 160A



Fig. 161A

Fig. 160A LONG SCREWS

With Coupling and Lock-Nut Faced

In ordering, always specify the length of thread wanted.

Size	inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
Standard length	inches	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	7	8	8 1/2	9
Price	each	.30	.35	.40	.55	.75	1.00	1.30	1.70	2.70	3.70	5.40	6.60
Price, galvanized	each	.35	.40	.50	.66	1.00	1.25	1.60	2.10	3.10	4.70	6.50	7.75

Long screws, longer than standard. made to order and charged as cut pipe.

Threads, couplings and lock-nuts, extra.

Long screws made to order from extra heavy pipe.

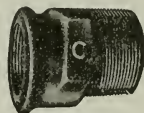


Fig. 161B

Fig. 161A OFFSETS

Malleable Iron

Size	inches	3/4	1	1 1/4
Price	each	.25	.40	.75
Offset	inches	1 1/4	1 1/2	2
Length	inches	3 1/4	4	5 1/2

Fig. 161B OFFSET REDUCING COUPLINGS

Malleable Iron

Size	inches	1x3/4	1 1/4x1	1 1/2x1 1/4	2x1 1/2	2 1/2x2	3x2 1/2
Price	each	.60	.70	.90	1.10	1.80	2.50
Size	inches	3 1/2x3	4x3	4x3 1/2	4 1/2x4	5x4	5x4 1/2
Price	each	3.00	4.00	4.00	5.00	6.00	6.00

FOR PIPE AND CHAIN WRENCHES, SEE INDEX

STANDARD UNIONS

MALLEABLE IRON
FOR STEAM WORKING PRESSURES
UP TO 150 POUNDS
Gasket Extra



Fig. 520
FEMALE UNION

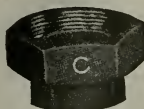


Fig. 520A
FEMALE TWO-THIRD
UNION



Fig. 520B
MALE AND FEMALE
UNION

Size	Inches	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
Female Union, Black	each	.18	.18	.20	.22	.27	.33	.46	.58	.75	1.55	2.10	3.65	4.35
Female Union, Galvanized	each	.27	.27	.30	.33	.40	.50	.70	.90	1.15	2.35	3.15	5.50	6.50
Male and Female Union, Black	each	...	.23	.25	.28	.33	.40	.57	.72	.95	1.95	...	...	...
Male and Female Union, Galv.	each	...	.32	.35	.39	.46	.57	.81	1.04	1.35	2.75	...	...	...

LIST PRICES OF FEMALE TWO-THIRD UNIONS

Size	Inches	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
Price	each	.12	.14	.16	.19	.22	.30	.40	.50	1.00	1.40	2.40	3.00	
Price, Galvanized	each	.18	.20	.22	.25	.35	.50	.75	1.60	2.10	3.70	4.35		

FOR KEWANEE, DART AND CHICAGO UNIONS, SEE INDEX



Fig. 100A
CROSS OVERS



Fig. 100B
CROSS OVER TEES

Figs. 100A-100B CROSS OVERS

Malleable Iron

Size	Inches	1/2	3/4	1
Price, Cross Overs	each	.20	.30	.45
Price, Cross Overs, Galvanized	each	.25	.40	.60
Price, Cross Over Tees, Galvanized	each	.38	.56	

Fig. 519 RAILROAD UNIONS

Brass to Iron Seat

Malleable female ends. Malleable hexagon ring. For steam working pressures up to 200 pounds. Tested to 250 pounds hydraulic pressure. Brass to iron seat Unions have been examined and tested by the Underwriters' laboratories and listed by the consulting engineers of the National Board of Fire Underwriters.

Ground joint, non-corrosive; no gasket required; readily taken apart.

Size	Inches	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price, No. 519	each	.30	.30	.40	.50	.60	.80	1.20	1.60	2.00	3.20	4.80
Price, No. 519, Galvanized	each	.45	.45	.60	.75	.90	1.20	1.80	2.40	3.00	4.80	6.20

CIRCULATING BOILER FITTINGS

Malleable Iron, Galvanized



Fig. 585
OLD PATTERN

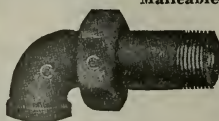


Fig. 586
NEW PATTERN



Fig. 587



Fig. 588



Fig. 589

In ordering always specify whether "old pattern" or "new pattern" Union Elbow is required. Unless otherwise specified "old pattern" Union Elbows will be furnished.

To avoid mistakes, particular care should be used in making orders quite clear for the above fittings.

Size	Inches	Female, Male 3/4x3/4x1	Female, Male 3/4x1/2x1	Female, Male 1/2x1/2x1
Price, Boiler Elbows, Galvanized	each	.40	.40	.40
Price, Boiler Elbows, with Union, Galvanized	each	.75	.75	.60
Price, Boiler Coupling, Galvanized	each	.40	.40	.40
Price, Boiler Coupling, with Union, Galvanized	each	.75	.75	.60

STEAM AND GAS FITTINGS

ELBOWS



Fig. 132A



Fig. 132B

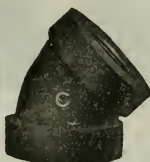


Fig. 132C



Fig. 133A



Fig. 133B



Fig. 133C

Fig. 132A ELBOWS

Cast Iron

Straight. Right and left hand elbows have ribs on left hand end.

Size	inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3			
Price, right hand	each	.05	.05	.06	.08	.10	.16	.20	.28	.50	.75
Price, right and left	each	.06	.06	.07	.09	.12	.18	.23	.32	.60	.85
Price, right hand, galvanized	each	.10	.10	.12	.16	.21	.32	.40	.56	1.00	1.50
Price, pitched	each				.10	.13	.20	.25	.35	.65	1.00

Size	inches	3 1/2	4	4 1/2	5	6	7	8	9	10	12
Price, right hand	each	1.05	1.20	1.75	2.00	2.75	4.70	6.75	9.00	13.50	20.00
Price, right hand, galvanized	each	2.10	2.40	3.50	4.00	5.50	9.40	13.50	18.00	27.00	40.00
Price, pitched	each	1.30	1.50								

Fig. 132B REDUCING ELBOWS

Cast Iron

Size	inches	%	¾	1	1¼	1½	2	2½	3	3½	
Price	each	.06	.07	.09	.12	.18	.23	.32	.60	.85	1.20
Price, galvanized	each		.14	.18	.24	.36	.46	.64	1.20	1.70	2.40
Price, pitched	each			.10	.13	.20	.25	.35	.65	1.00	1.30

Size	inches	4	4½	5	6	7	8	9	10	12
Price	each	1.40	2.00	2.30	3.15	5.40	7.75	10.50	15.50	23.00
Price, galvanized	each	2.80	4.00	4.60	6.30	10.80	15.50	21.00	31.00	46.00

Fig. 132C 45° ELBOWS

Cast Iron

Size	inches	¾	1	1¼	1½	2	2½	3	3½
Price	each	.06	.07	.10	.12	.19	.24	.34	.60
Price, galvanized	each	.12	.14	.20	.24	.38	.48	.68	1.20

Size	inches	4	4½	5	6	7	8	9	10	12
Price	each	1.45	2.20	2.50	3.45	5.90	8.50	11.25	17.00	25.00
Price, galvanized	each	2.90	4.40	5.00	6.90	11.80	17.00	22.50	34.00	50.00

Fig. 133A ELBOWS

Malleable Iron

STRAIGHT AND REDUCING

Size	inches	¾	¾	¾	½	¾	1	1¼	1½	2	2½	3	3¾	4	4½	5	6
Price, R. H.	each	.06	.07	.08	.10	.15	.22	.25	.35	.50	.90	1.50	2.25	3.00	3.50	4.00	6.50
Price, R. and L.	each		.09	.11	.13	.17	.25	.30	.40	.65							
Price, gal., R. H.	each	.08	.09	.11	.14	.20	.32	.40	.60	.90	1.50	2.60	3.75	5.00		6.50	10.00
Price, R. & L., Galv.	each		.12	.16	.17	.23	.35	.45	.65	1.00							

Fig. 133B 45° ELBOWS

Malleable Iron

Size	inches	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6			
Price	each	.08	.10	.12	.18	.26	.36	.54	.82	1.25	2.50	3.25	4.50	5.25	6.00	7.50
Price, galvanized	each	.12	.15	.20	.25	.40	.60	.85	1.35	1.90	3.75	4.75	6.75		9.00	11.00

Fig. 133C 60° ELBOWS

Malleable Iron

Size	inches	1 1/4	1 1/2	2
Price	each	.30	.45	.65
Price, galvanized	each	.45	.70	1.05

BUSHINGS, PLUGS, REDUCERS AND CAPS

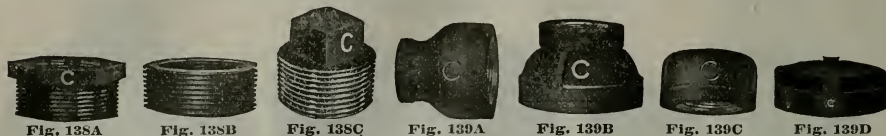


Fig. 138A BUSHINGS
Cast Iron

Reducing two or more sizes, up to 2½ inch inclusive.

Size	inches	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12		
Price	each	.04	.04	.05	.06	.07	.09	.14	.21	.30	.40	.50	.75	.93	1.25	1.87	2.75	3.25	3.75	5.00
Price, galvanized	each	.08	.08	.10	.12	.14	.18	.28	.42	.60	.80	1.00	1.50	1.85	2.50	3.75	5.50	6.50	7.50	10.00

Malleable Bushings, Reducing one or more sizes 3 inches and up.

Size	inches	¾	¾	1½	¾	1	1¼	1½	2	2½
Price	each	.04	.04	.04	.05	.06	.07	.09	.14	.21
Price, galvanized	each	.08	.08	.08	.10	.12	.14	.18	.28	.42

Fig. 138B BUSHINGS
Malleable Iron Faced
Reducing one size only.

Size	inches	¾	1	1½	2	2½	3	3½	4	4½	5	6			
Price	each	.08	.09	.11	.13	.17	.22	.32	.48	.70	1.20	1.50	2.10	2.60	3.75
Price, galvanized	each	.12	.14	.17	.20	.25	.33	.48	.72	1.05	1.80	2.25	3.00	3.75	5.00

Fig. 138C PLUGS
Cast Iron

Size	inches	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5	6	7	8	9	10	12
Price	each	.02	.02	.02	.02	.03	.04	.05	.07	.10	.18	.25	.38	.42	.65	.88	1.20	1.85	2.75	3.25	3.75	5.00
Price, galvanized	each	.04	.04	.04	.04	.05	.08	.10	.14	.20	.36	.50	.76	.84	1.20	1.75	2.40	3.70	5.50	6.50	7.50	10.00

PLUGS
Cast Iron

Size		inches														
		¾	¾	¾	¾	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6
Price, countersunk	each	...	...	.04	.06	.08	.09	.11	.15	.30	.40	.92	1.10	...	2.00	3.50
Price, tapped for air cock	each	...	...	.12	.15	.20	.25	.30	...	...	...	...	...	...	...	...
Price, L. H.	each	...	...	...	.06	.08	.09	.11	.15	...	...	...	...	...	...	...
Price, solid	each	.04	.04	.04	.06	.08	.09	.11	.15	.27	.38	.57	.63	1.00	1.35	1.80

Fig. 139A REDUCERS
Malleable Iron

Size	inches	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4
Price	each	.05	.06	.07	.10	.16	.20	.28	.45	.70	1.00	1.50	1.85
Price, galvanized	each	.08	.10	.10	.15	.25	.35	.45	.75	1.05	1.65	2.40	3.05

Fig. 139B REDUCERS
Cast Iron

Size	inches	4½	5	6	7	8	9	10	12
Price	each	1.85	2.00	2.70	5.35	6.75	8.35	10.00	15.00
Price, galvanized	each	3.70	4.00	5.40	10.70	13.50	16.70	20.00	30.00

Fig. 139C CAPS
Malleable Iron

Size		inches													
		¾	1	1¼	1½	2	2½	3	3½	4	5	6			
Price	each	.03	.04	.05	.08	.12	.16	.24	.32	.45	.85	1.00	1.20	2.50	3.50
Price, galvanized	each	.04	.05	.08	.12	.17	.24	.38	.52	.76	1.30	1.60	2.00	3.50	5.00

Fig. 139D CAPS
Cast Iron

Size	inches	4	4½	5	6	7	8	9	10	12
Price	each	.87	1.05	1.20	1.55	2.60	2.85	4.75	5.50	7.00
Price, galvanized	each	1.74	2.10	2.40	3.10	5.00	5.70	9.50	11.00	14.00

TEES—CROSSES

TEES

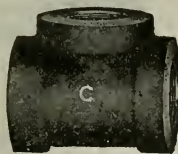


Fig. 135A



Fig. 135B



Fig. 135C

TEES—CAST IRON

Straight

FIG. 135A

Size	inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12
Price	each	.08	.08	.09	.12	.15	.23	.29	.41	.73	1.10	1.50	1.75	2.55	3.00	4.00	6.80	9.75	13.00	19.50	29.00
Price, galvanized	each	.16	.16	.18	.24	.30	.46	.58	.82	1.46	2.20	3.00	3.50	5.10	6.00	8.00	13.60	19.50	26.00	39.00	58.00

REDUCING TEES—CAST IRON

FIG. 135B

Size	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	12
Price	each	.10	.14	.17	.27	.33	.47	.83	1.25	1.75	2.00	2.95	3.50	4.60	7.80	11.25	15.00	22.50	33.50
Price, galvanized	each	.20	.28	.34	.54	.66	.94	1.66	2.50	3.50	4.00	5.90	7.00	9.20	15.60	22.50	30.00	45.00	67.00

TEES—MALLEABLE IRON

Straight and Reducing

FIG. 135C

Size	inches																
	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6				
Price	each	.07	.08	.09	.11	.15	.25	.30	.45	.60	1.05	1.70	2.50	3.40	4.25	5.00	7.75
Price, galvanized	each	.09	.10	.13	.16	.20	.38	.50	.70	1.00	1.90	3.00	4.35	5.75	8.06	12.00	

Customers desiring R. and L. Tees, will state when ordering, which hole is to be tapped left hand. Such goods can always be furnished to order.

CROSSES



Fig. 137A



Fig. 137B



Fig. 137C

Fig. 137A CROSSES—CAST IRON

Straight

Size	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2
Price	each	.16	.22	.27	.42	.53	.75	1.30	2.00	2.70
Price, galvanized	each	.32	.44	.54	.84	1.06	1.50	2.60	4.00	5.40

Size	inches	4	4 1/2	5	6	7	8	9	10	12
Price	each	3.15	4.60	5.50	7.25	12.25	17.50	23.50	35.00	52.50
Price, galvanized	each	6.30	9.20	11.00	14.50	24.50	35.00	47.00	70.00	105.00

Fig. 137B REDUCING CROSSES—CAST IRON

Size	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2
Price	each	.18	.25	.30	.46	.60	.83	1.45	2.20	3.00
Price, galvanized	each	.36	.50	.60	.92	1.20	1.66	2.90	4.40	6.00

Size	inches	4	4 1/2	5	6	7	8	9	10	12
Price	each	3.50	5.10	6.90	8.00	13.50	19.25	26.00	38.50	58.00
Price, galvanized	each	7.00	10.20	12.00	16.00	27.00	38.50	52.00	77.00	116.00

Fig. 137C CROSSES—MALLEABLE IRON

Straight and Reducing

Size	inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6
Price	each	.09	.10	.16	.20	.30	.40	.60	1.00	1.75	3.00	3.25	5.25	7.50	13.00
Price, galvanized	each	.12	.14	.25	.29	.45	.60	.90	1.50	2.75	4.50	8.00			



Fig. 136A



Fig. 136B



Fig. 136C

Fig. 136A SERVICE TEES—Malleable Iron

Size	inches	¾	½	¾	1	1¼	1½	2	2½	3x2½x3	3x3x1
Price	each	.12	.15	.25	.35	.50	.75	1.15	2.00	2.50	4.00
Price, galvanized	each	.15	.20	.35	.50	.70	1.10	1.65			

Fig. 136B DROP TEES—Malleable Iron

Size	inches	¾	½	¾	1
Price, female	each	.10	.14	.22	.30
Price, female, galvanized	each	.15	.25	.40	.55
Price, male and female	each	.10	.14	.22	.30
Price, male and female, galvanized	each	.15	.25	.40	.55

Fig. 136C LONG DROP TEES—Malleable Iron

Size	inches	¾	¾x¾x½	1x1½	1¼x1½x1½
Price	each	.12	.30	.40	.60
Price, galvanized	each	.17			
Drop length, over all	inches	2½	3½	3½	3½

STEAM AND GAS FITTINGS—ELBOWS

Fig. 134A



Fig. 134B



Fig. 134C



Fig. 134D



Fig. 134E

Figs. 134A-134B STREET ELBOWS—Malleable Iron

Size	inches	¼	¾	½	¾	1	1¼	1½	2	2½	3	4
Price	each	.10	.10	.12	.20	.25	.40	.55	.80	1.50	2.25	3.50
Price, galvanized	each	.12	.12	.15	.25	.35	.55	.80	1.30	2.25	3.50	
Price, 45°	each		.12	.20	.25	.40	.55	.80	1.30	2.25	3.50	
Price, 45°, galvanized	each		.15	.25	.35	.55	.80	1.30				

Fig. 134C SIDE OUTLET ELBOWS—Malleable Iron

Size	inches	¾	¾	¾	1	1¼	1½	2
Price	each	.08	.10	.18	.30	.45	.60	1.00
Price, gal.	each	.10	.15	.25	.45	.65	.90	1.50

Fig. 134D DROP ELBOWS—Malleable Iron

Size	inches	¾	¾	½	¾
Price, female	each	.06	.08	.12	.20
Price, female, galvanized	each		.12	.20	.35
Price, male and female	each	.08	.12		
Price, male and female, galv.	each		.12	.20	

Fig. 134E LONG DROP ELBOWS—Malleable Iron

Size	inches	¾x¾	¾x¾	½x¾	¾x½
Price	each	.10	.10	.18	.18
Price, galvanized	each	.18	.18	.27	.27
Drop length, over all	inches	2½	2½	3½	3½



Fig. 140A



Fig. 140B



Fig. 140C

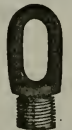


Fig. 140D



Fig. 140E



No. 140B

Fig. 140A LOCK NUTS—Malleable Iron

Size	inches	¾	¾	½	¾	1	1¼	1½	2
Price	each	.02	.03	.04	.05	.07	.09	.11	.13
Price, galvanized	each	.03	.04	.05	.07	.10	.14	.20	.30

Fig. 140B WASTE NUTS—Malleable Iron

Size	inches	¾	¾	½	¾	1	1¼	1½
Price	each	.04	.05	.06	.08	.10	.15	.25
Price, galvanized	each	.08	.10	.12	.16	.20	.30	.50

Figs. 140CDEF CHANDELIER HOOKS OR LOOPS—WALL PLATE

Size	inches	¾	½	¾
Price, extension pieces, No. 140C	each	.06	.05	.12
Price, extension pieces, galvanized, No. 140D	each	.09	.12	.18
Price, chandelier hooks or loops, No. 140E	each	.10	.12	.18
Price, wall plates, No. 140F	each	.12	.16	.30

Can furnish male hooks when so specified.



Fig. 153A

RUN



Inlet
Fig. 153C
Y BENDS
CAST IRON
No. 153A

RUN



Fig. 153B

Size	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2
Price	each	\$0.20	.28	.34	.54	.66	.94	1.66	2.50	3.50
Price, Galvanized	each	.40	.56	.68	1.08	1.32	1.88	3.32	5.00	7.00
Size	inches	4	4 1/2	5	6	7	8	10	12	
Price	each	\$4.00	5.90	7.00	9.20	15.60	22.50	45.00	67.00	
Price, Galvanized	each	8.00	11.80	14.00	18.40	31.20	45.00	90.00	134.00	

Y BENDS MALLEABLE IRON Straight and Reducing No. 153B

Size	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
Price	each	\$0.40	.50	.60	.80	1.00	1.70	2.00	4.00	5.50
Price, Galvanized	each	.60	.75	.90	1.25	1.50	2.50	3.00	6.00	8.25

60° Y BENDS MALLEABLE IRON (Not illustrated)

Size	inches	2x2	2x1 1/2
Price	each	1.70	1.70
Price, Galvanized	each	2.50	2.50

MEDIUM REDUCING DOUBLE BRANCH ELBOWS CAST IRON No. 153C

Size	inches	1x1x1 1/4	1 1/4x1 1/4x1 1/2	1 1/2x1 1/2x2	2x2x2 1/2
Price	each	\$0.75	1.05	1.50	2.25
Size	inches	2 1/2x2 1/2x3	3x3x4	4x4x5	5x5x6
Price	each	\$4.25	6.50	12.00	16.50

In describing Medium Reducing Double Branch Elbows, the Run is first named and then the Inlet.



Fig. 154A



Fig. 154B

ECCENTRIC REDUCERS CAST IRON No. 154A

Size	inches	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	8
Price	each	\$0.55	.72	1.00	1.50	2.40	3.00	4.00	5.00	6.00	8.00	11.00

ECCENTRIC BUSHINGS CAST IRON No. 154B

Size	inches	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2
Price	each	\$0.22	.25	.27	.42	.60	.80	1.00	1.50
Size	inches	5	6	7	8	9	10	12	
Price	each	\$1.85	2.50	3.75	5.50	6.50	7.50	10.00	

GEO. B. CARPENTER & CO.

MALLEABLE IRON RETURN BENDS



Fig. 150A CLOSE

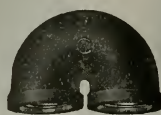


Fig. 150B MEDIUM



Fig. 150C OPEN

Fig. 150D SPECIAL
WIDECLOSE OR MEDIUM PATTERNS
Nos. 150A-150B

Size	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price, right hand.....	each	.18	.25	.35	.50	.75	1.00
Price, right hand, galv.....	each	.25	.35	.55	.75	1.15	1.65
Price, right and left.....	each	.23	.30	.45	.60	.90	1.25
Price, right and left, galv.....	each		.40	.65			
Price, left hand.....	each	.23	.30	.45	.60	.90	1.25
Center to center, close.....	inches	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$
Center to center, medium.....	inches	$1\frac{1}{4}$	$1\frac{1}{2}$	1 $\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{1}{2}$	3

OPEN PATTERN
Nos. 150C-150D

Size	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Price, right hand.....	each	.20	.30	.50	.65	.85	1.25	2.00	3.00
Price, right hand, galv.....	each	.28	.45	.70	.90	1.25	2.00	3.50	5.00
Price, right and left.....	each	.25	.38	.60	.80	1.05	1.55	2.50	3.75
Price, right and left, galv.....	each		.55	.80					
Price, left hand.....	each	.25	.38	.60	.80	1.05	1.55	2.50	3.75
Center to center.....	inches	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5

CAST IRON RETURN BENDS



Fig. 151A CLOSE

Fig. 152
CLOSE PATTERN
Nos. 151A-151B

Fig. 151B OPEN

Size	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	4
Price, right hand.....	each	.18	.20	.22	.28	.40	.57	1.20	1.70	5.00
Price, right and left.....	each	.21	.23	.26	.33	.46	.66	1.40	1.95	5.25
Price, left hand.....	each	.21	.23	.26	.33	.46	.66	1.40	1.95	5.25
Price, right hand, galv. each		.36	.40	.44	.56	.80	1.14	2.40	3.40	10.00
Center to center.....	inches	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{4}$	$3\frac{3}{4}$	$4\frac{1}{4}$	6

CLOSE PATTERN, PITCHED—Not Illustrated
Suitable for Coils as per Table Below

Size	inches	1	1	1	1	1	1	$1\frac{1}{2}$	$1\frac{1}{4}$	$1\frac{1}{2}$
Length of pipe in coil.....	feet	3	4	5	6	8	4	5	6	
Price, right hand.....	each	.26	.26	.26	.26	.26	.33	.33	.33	
Price, right and left.....	each	.26	.26	.26	.26	.26	.33	.33	.33	

Wide Pattern. Right Hand
No. 152

Size	inches	1	1	1	1	1	$1\frac{1}{2}$	$1\frac{1}{4}$	$1\frac{1}{2}$
Price.....	each	.45	.50	.60	.75	1.00	1.00	1.25	1.25
Price, galvanized.....	each	.80	.90	1.10	1.30	1.60	1.75	2.00	2.00
Center to center.....	inches	3	4	5	6	8	4	6	8
Size	inches	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	2	2	2	2	4
Price.....	each	1.30	1.60	2.00	1.75	2.00	3.00	3.50	7.50
Price, galvanized.....	each	2.30	2.60	3.25	3.00	3.25	4.50	5.00	11.00
Center to center.....	inches	$4\frac{1}{2}$	6	8	$4\frac{1}{2}$	6	7	8	11

LONG SWEEP FITTINGS

CAST IRON

For Steam Working Pressures up to 125 Pounds

For Water Working Pressures up to 175 Pounds



Fig. 170A

Outlet
Fig. 170B

No. 170A LONG SWEEP ELBOWS

Size	inches	1	1½	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Elbows	each	.32	.40	.55	.80	1.20	2.25	3.25	5.50	6.50	8.75	13.00	17.00	25.50	30.00	40.00	
Reducing elbows	each	.48	.60	.83	1.20	1.80	3.38	4.88	5.25	8.25	9.75	13.13	19.50	25.50	38.25	45.00	60.00

No. 170B LONG SWEEP DOUBLE BRANCH ELBOWS

Size	inches	1	1½	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Elbows	each	.64	.80	1.10	1.60	2.40	4.50	6.50	7.00	11.00	13.00	17.50	26.00	34.00	51.00	60.00	80.00
Reducing elbows	each	.96	1.20	1.65	2.40	3.60	6.75	9.75	10.50	16.50	19.50	26.25	39.00	51.00	76.50	90.00	120.00

STEAM PIPE SADDLES

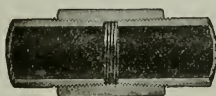
MALLEABLE IRON WITH WROUGHT IRON STRAPS
For Wrought Iron Pipe



Fig. 175A

Size of pipe	inches	1½	2	2½	3	3½	4	4½
Tapped for pipe	inches	¾ & ¾	¾ to 1½	¾ to 1½	¾ to 2	¾ to 2	¾ to 2	¾ to 2
Price	each	.90	1.00	1.25	1.25	1.40	1.50	2.50
Size of pipe	inches	5	6	7	8	9	10	12
Tapped for pipe	inches	¾ to 2	2½ & 3	¾ to 2	2½ to 4	1 to 4	1 to 4	1½ to 4
Price	each	2.75	2.75	2.75	5.75	6.50	6.50	8.50
Size of pipe	inches	10	10	12	12	15	16	
Tapped for pipe	inches	1½ to 4	4½ to 6	1½ to 4	4½ to 6	3 to 6	3 to 6	
Price	each	10.00	10.00	14.00	14.00	22.00	25.00	

EXTRA HEAVY OR HYDRAULIC COUPLINGS

Fig. 176A
Hydraulic CouplingsFig. 176B
Hydraulic Recessed Couplings

Size	inches	¾	¾	¾	1	1½	1½	2	2½	3	3½	4
Outside diameter	inches	.95	1.13	1.44	1.63	2.07	2.31	2.81	3.31	4.00	4.63	5.13
Length	inches	1.50	1.88	2.13	2.38	2.63	2.87	3.13	3.60	3.69	4.25	4.25
Threads to inch of screw		18	14	14	11½	11½	11½	11½	8	8	8	8
Weight, each	pounds	.23	.28	.50	.56	.90	1.35	1.80	2.40	3.46	5.25	6.80
Price, plain	each	.14	.14	.20	.26	.34	.42	.56	.80	1.20	1.60	2.00
Price, galvanized	each	.20	.20	.25	.32	.42	.55	.75	1.05	1.50	1.90	3.00
Price, recessed, plain	each	.25	.25	.30	.35	.45	.55	.70	.95	1.40	1.85	2.25
Price, recessed, galvanized	each	.30	.30	.35	.40	.55	.70	.90	1.20	1.70	2.15	3.25
Price, right and left	each	.20	.20	.20	.40	.45	.55	.70				
Price, right and left, galvanized	each	.25	.35	.45	.55	.70	.90					
Size	inches	4½	5	6	7	8	9	10				
Price, recessed, plain	each	5.70	6.90	8.00	11.10	11.60	14.50	17.50				
Price, recessed, galvanized	each	4½	5	6	7	8	9	10				

These couplings are made extra heavy and long, and cut with a perfect taper and longer thread.

Threads for these couplings may be cut with an ordinary die.

The object of the Recessed Couplings is to make a better joint, protecting the pipe at the weak point, viz: That part left exposed from cutting the thread and not covered with the ordinary coupling.

XX HYDRAULIC COUPLINGS

Size	inches	¾	1	1½	1½	2	2½
Outside diameter	inches	1.66	1.90	2.22	2.44	3.19	3.62
Length	inches	1.88	2.63	2.88	3.13	2.38	3.62
Threads to inch of screw		14	11½	11½	11½	11½	8
Weight, each	pounds	.70	1.12	1.50	1.88	3.55	4.50
Price, plain	each	.40	.55	.70	.85	1.15	1.60
Price, recessed, plain	each	.50	.65	.85	1.00	1.50	1.85



Fig. 94E

CRANE UNIONS EXTRA HEAVY—MALLEABLE IRON

For Steam Working Pressures up to 250 Pounds

These Unions are tested to hydraulic pressure corresponding to the working pressure. Furnished with metallic gasket. The face of this Union, being corrugated, holds the metallic gasket in place. This improvement makes the blowing-out of the gasket absolutely impossible. Should it at any time be necessary to replace the gasket, it can be readily done.

Size	inches	1/4	3/4	1 1/2	2	3	4	6	8	10	12
Price	each	.20	.24	.28	.35	.40	.56	.80	.95	2.00	2.75
Price, galvanized	each	.24	.28	.35	.46	.55	.78	1.12	1.35	2.90	3.75

CAST IRON FITTINGS EXTRA HEAVY

For Steam Working Pressures up to 250 Pounds



Fig. 450A. Elbow



Fig. 450B. 45° Elbow



Fig. 450C. Cross



Fig. 450D. Tee

These fittings are tested to hydraulic pressures corresponding to the above working pressures.

Size	inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	10	12
Elbows	each	.25	.30	.35	.45	.60	.75	1.25	2.00	2.75	3.50	4.25	5.50	8.00	12.00	17.00	28.00	40.00
Elbows, reducing	each	...	.40	.45	.55	.75	.95	1.55	2.50	...	4.40	...	6.80	...	...	...	...	...
45° elbows	each	...	.35	.40	.44	.55	.70	.90	1.50	2.50	3.50	4.50	5.50	6.75	9.75	14.50	21.00	34.00
Tees	each	...	.40	.45	.55	.70	.90	1.15	1.80	3.00	4.25	5.50	6.75	8.25	12.00	18.00	25.00	42.00
Tees, reducing	each	...	...	.60	.70	.90	1.15	1.40	2.25	3.75	5.30	6.85	8.50	10.25	15.00	22.50	31.00	52.00
Crosses	each	...	...	...	.70	.90	1.20	1.60	2.50	4.00	5.50	7.00	8.50	11.00	16.00	24.00	34.00	56.00
Y bends	each	...	...	...	...	1.35	1.80	2.25	3.75	6.00	...	...	...	...	...	...	...	...

GALVANIZED EXTRA HEAVY FITTINGS DOUBLE ABOVE LIST

The radius of these fittings is longer than the ordinary, thereby reducing friction.

We do not recommend the use of screwed fittings above 6 inch; for larger sizes, flanged are more suitable.

For list of sizes of reducing fittings carried in stock, see index. Should other sizes be wanted, we will furnish them to order, and will charge extra, according to quantity wanted.

MALLEABLE IRON FITTINGS EXTRA HEAVY

For Steam Working Pressures up to 250 Pounds



Fig. 451A. Elbow



Fig. 451B. 45° Elbow

Fig. 451C
Long Sweep Elbow

Fig. 451D. Tee



Fig. 451E. Cross

These Unions are tested to hydraulic pressure corresponding to the working pressure.

Size	inches	1/4	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Elbows	each	.20	.25	.30	.35	.40	.55	.70	.90	1.50	2.40	3.25	4.25	6.50	9.50	21.00
45° elbows	each	...	.25	.30	.35	.42	.50	.65	.85	1.10	1.85	2.85	4.00	5.00	7.50	10.50
Long sweep elbows	each	...	...	...	...	.64	.80	1.01	1.60	2.40	4.50	6.50	7.00	13.00	17.50	...
Tees	each	...	.30	.40	.45	.50	.60	.80	1.05	1.35	2.25	3.60	5.00	6.50	9.75	14.25
Crosses	each	...	.60	.80	.90	1.00	1.20	1.60	2.10	2.70	4.50	7.20	10.00	13.00	19.50	28.50
Reducers	each	...	...	.30	.40	.45	.55	.70	...	...	...	...	...	...	...	...

Galvanized extra heavy malleable fittings made to order at 50% advance on above list.

Long sweep elbows, 45° elbows and crosses are not carried in stock in reducing sizes, but will be made to order at a special price, according to quantity wanted.

Reducing elbows and tees carried in stock, furnished at same price as straight sizes.

EXTRA HEAVY AMMONIA FITTINGS

MALLEABLE IRON—WITH RECESSED ENDS FOR SOLDERING

Tested to 300 Pounds Under Water Air Pressure



Fig. 260A.
Elbow



Fig. 262A.
45° Elbow



Fig. 264A.
Tee



Fig. 266A.
Cross



Fig. 268A.
Return Bend



Fig. 269A.
Return Bend B. O.

Size	inches	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2
Elbows, No. 260A.....	each	.20	.25	.30	.35	.40	.55	.70
45° Elbows, No. 262A.....	each	.25	.30	.35	.42	.50	.65	.85
Tees, No. 264A.....	each	.30	.40	.45	.50	.60	.80	1.05
Crosses, No. 266A.....	each	.60	.80	.90	1.00	1.20	1.60	2.10
Reducers, No. 267A.....	each				.30	.40	.45	.55

Size	inches	2	2 1/2	3	3 1/2	4	5	6
Elbows, No. 260A.....	each	.90	1.50	2.40	3.25	4.25	6.50	9.50
45° Elbows, No. 262A.....	each	1.10	1.85	2.85	4.00	5.00		
Tees, No. 264A.....	each	1.35	2.25	3.60	5.00	6.50	9.75	14.25
Crosses, No. 266A.....	each	2.70	4.50	7.20	10.00	13.00	19.50	28.50
Reducers, No. 267A.....	each	.70						

45° elbows, crosses and return bends are not carried in stock in reducing sizes, but will be made to order at a special price, according to quantity wanted.

For reducing sizes elbows, tees and reducers carried in stock, see index.

EXTRA HEAVY MALLEABLE IRON RETURN BENDS

Size	inches	1	1	1	1 1/4	1 1/4	1 1/4
Price, No. 268A.....	each	.60	.75	.85	.90	.95	1.00
Center to center.....	inches	1 3/4	2 1/4	3	2 1/4	2 1/2	3
Size	inches	1 1/4	1 1/4	1 1/2	2	2	2
Price, No. 268A.....	each	1.20	1.55	1.15	1.25	1.30	1.90
Price, No. 269A, with 1/2 in. back outlet.....	each		1.90				2.25
Center to center.....	inches	4	6	3	3	3 1/2	4

AMMONIA FLANGE UNIONS

Extra heavy malleable iron, with recessed ends for soldering. Tested to 300 lbs. air pressure under water. Tongue and groove construction with Kilingerit gasket.

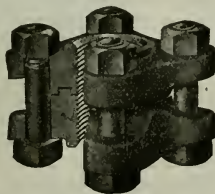
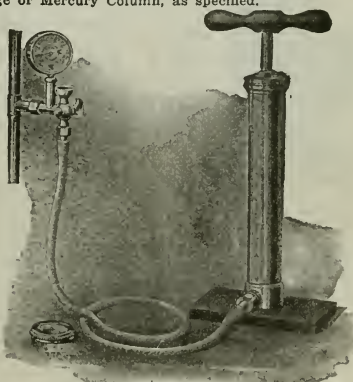


Fig. 539

Size	inches	1/4	3/8	1/2	3/4	1	1 1/4
Price	each	1.35	1.35	1.50	1.50	1.50	1.75
Largest out. dia. in.....		3	3 3/8	3 1/2	4 1/4	3 3/4	4 1/2
No. of bolts.....		2	2	2	2	4	4
Size	inches	1 1/2	2	2 1/4	3	3 1/4	4
Price	each	2.25	3.00	6.00	9.00	11.50	14.00
Largest out. dia. in.....		5	5 1/2	6 1/4	7 1/4	8 1/4	9
No. of bolts.....		4	4	4	4	4	6

GAS PROVING PUMP

For locating leaks in gas pipes and fittings the Ashcroft Gas Proving Set will be found most efficient and convenient. It is regularly equipped with the Ashcroft Gas Proving Gauge or Mercury Column, as specified.



PRICES

Pump, complete with Gauge and Ether Cup or Mercury Column.....	each	\$16.00
Pump and Hose only.....	"	8.00
Ether Cup and Cock.....	"	3.00
Mercury Column with Ether Cup and Cock.....	"	8.00

STANDARD CAST IRON FLANGED FITTINGS

FOR STEAM WORKING PRESSURES UP TO 125 POUNDS

Flanged Elbows
Fig. 52545° Flanged Elbows
Fig. 527Flanged Reducing Taper Elbows
Fig. 545

Size inches	No. 525			Diameter of Flanges inches	No. 527		
	Faced each	Faced and Drilled each	Center to Face inches		Faced each	Faced and Drilled each	Center to Face inches
1 1/4	3.00	3.60	3 3/4	4 1/2	3.30	3.90	2
1 1/2	3.00	3.60	4	5	3.30	3.90	2 1/4
2	3.00	3.60	4 1/2	6	3.30	3.90	2 1/2
2 1/2	3.15	3.75	5	7	3.50	4.10	3
3	3.45	4.15	5 1/2	7 1/2	3.80	4.50	3
3 1/2	4.05	4.90	6	8 1/2	4.50	5.35	3 1/2
4	4.50	5.50	6 1/2	9	5.00	6.00	4
4 1/2	5.50	6.50	7	9 3/4	6.00	7.00	4
5	6.25	7.25	7 1/2	10	6.90	7.90	4 1/2
6	7.60	8.90	8	11	8.35	9.65	5
7	10.50	12.00	8 1/2	12 1/2	11.00	12.50	5 1/2
8	12.00	13.60	9	13 1/2	12.60	14.20	5 1/2
9	17.00	19.25	10	15	17.75	20.00	6
10	19.00	21.70	11	16	20.00	22.70	6 1/2
12	28.00	31.00	12	19	29.50	32.50	7 1/2
14	41.50	45.25	14	21	41.50	45.25	7 1/2
15	47.00	51.50	14 1/2	22 1/4	47.00	51.50	8
16	54.50	59.50	15	23 1/2	54.50	59.50	8
18	71.00	77.00	16 1/2	25	71.00	77.00	8 1/2

Larger sizes made to order. Prices on application.
Furnished faced only, unless otherwise ordered.

STANDARD CAST IRON FLANGED FITTINGS

FOR STEAM WORKING PRESSURES UP TO 125 POUNDS

Size inches	No. 545		Diameter of Flanges inches	Center to Face inches	Size inches	No. 545		Diameter of Flanges inches	Center to Face inches
	Faced each	Faced and Drilled each				Faced each	Faced and Drilled each		
3 x 1 1/2	6.90	7.60	7 1/2 x 5	5 1/2	8x 6	24.00	25.60	13 1/2 x 11	9
3 x 2	6.90	7.60	7 1/2 x 6	5 1/2	8x 7	24.00	25.60	13 1/2 x 12 1/2	9
3 x 2 1/2	6.90	7.60	7 1/2 x 7	5 1/2	9x 6	34.00	36.25	15 x 11	10
3 1/2 x 2	8.10	8.95	8 1/2 x 6	6	9x 8	34.00	36.25	15 x 13 1/2	10
3 1/2 x 2 1/2	8.10	8.95	8 1/2 x 7	6	10x 4 1/2	38.00	40.70	16 x 9 3/4	11
3 1/2 x 3	8.10	8.95	8 1/2 x 7 1/2	6	10x 5	38.00	40.70	16 x 10	11
4 x 2	9.00	10.00	9 x 6	6 1/2	10x 6	38.00	40.70	16 x 11	11
4 x 2 1/2	9.00	10.00	9 x 7	6 1/2	10x 7	38.00	40.70	16 x 12 1/2	11
4 x 3	9.00	10.00	9 x 7 1/2	6 1/2	10x 8	38.00	40.70	16 x 13 1/2	11
4 x 3 1/2	9.00	10.00	9 x 8 1/2	6 1/2	10x 9	38.00	40.70	16 x 15	11
4 1/2 x 2 1/2	11.00	12.00	9 1/4 x 7	7	12x 6	56.00	59.00	19 x 11	12
4 1/2 x 3 1/2	11.00	12.00	9 1/4 x 8 1/2	7	12x 7	56.00	59.00	19 x 12 1/2	12
4 1/2 x 4	11.00	12.00	9 1/4 x 9	7	12x 8	56.00	59.00	19 x 13 1/2	12
5 x 2 1/2	12.50	13.50	10 x 7	7 1/2	12x 10	56.00	59.00	19 x 16	12
5 x 3	12.50	13.50	10 x 7 1/2	7 1/2	14x 10	70.00	73.75	21 x 16	14
5 x 4	12.50	13.50	10 x 9	7 1/2	14x 12	70.00	73.75	21 x 19	14
6 x 2 1/2	15.25	16.55	11 x 7	8	15x 10	80.00	84.50	22 1/2 x 16	14 1/2
6 x 3	15.25	16.55	11 x 7 1/2	8	15x 12	80.00	84.50	22 1/2 x 19	14 1/2
6 x 3 1/2	15.25	16.55	11 x 8 1/2	8	16x 12	90.00	95.00	23 1/2 x 19	15
6 x 4	15.25	16.55	11 x 9	8	16x 14	90.00	95.00	23 1/2 x 21	15
6 x 5	15.25	16.55	11 x 10	8	16x 15	90.00	95.00	23 1/2 x 22 1/2	15
7 x 6	21.00	22.50	12 1/2 x 11	8 1/2	18x 16	105.00	111.00	25 x 23 1/2	16 1/2
8 x 4	24.00	25.60	13 1/2 x 9	9	20x 16	120.00	127.00	27 1/2 x 23 1/2	18

Furnished faced only, unless otherwise ordered.



Flanged Crosses
Fig. 537

STANDARD CAST IRON FLANGED FITTINGS

For Steam Working Pressures up to
125 Pounds



Reducing Flanged Crosses
Fig. 539

Size inches	No. 537		Dia. of Flanges inches	No. 539		Size inches	No. 537		Dia. of Flanges inches	No. 539	
	Faced Each	Faced and Drilled Each		Faced Each	F'e'd and Drilled Each		Faced Each	Faced and Drilled Each		Faced Each	Faced and Drilled Each
1 1/4	6.75	7.95	4 1/2			8	26.50	29.75	13 1/2	30.50	33.75
1 1/2	6.75	7.95	5			9	37.50	42.00	15	43.00	47.50
2	6.75	7.95	6	7.75	8.95	10	42.00	47.50	16	48.00	53.50
2 1/2	6.95	8.15	7	8.00	9.20	12	61.50	67.50	19	71.00	77.00
3	7.65	9.05	7 1/2	8.75	10.15	14	91.00	98.50	21	105.00	112.50
3 1/2	9.00	10.70	8 1/2	10.35	12.05	15	103.00	112.00	22 1/2	118.00	127.00
4	10.00	12.00	9	11.50	13.50	16	120.00	130.00	23 1/2	138.00	148.00
4 1/2	12.00	14.00	9 1/4	13.75	15.75	18	157.00	169.00	25	180.00	192.00
5	12.75	15.75	10	15.75	17.75	20	198.00	212.00	27 1/2	228.00	242.00
6	16.75	19.45	11	19.25	21.75	22	248.00	266.00	29 1/2	285.00	303.00
7	23.00	26.00	12 1/2	26.50	29.50	24	310.00	330.00	32	355.00	375.00

Larger sizes made to order. Prices on application. Furnished faced only, unless otherwise ordered.
For low pressure and extra heavy flanged fittings, see index.



Flanged Tees
Fig. 538

STANDARD CAST IRON FLANGED FITTINGS

For Steam Working Pressures up to 125 Pounds



Reducing Flanged Tees
Reducing in run or branch
Fig. 531

Size inches	No. 538		Dia. of Flanges inches	No. 531		Size inches	No. 538		Dia. of Flanges inches	No. 531	
	Faced Each	Faced and Drilled Each		Faced Each	F'e'd and Drilled Each		Faced Each	Faced and Drilled Each		Faced Each	Faced and Drilled Each
1 1/4	4.35	5.25	4 1/2			8	17.40	19.80	13 1/2	20.00	22.40
1 1/2	4.35	5.25	5	5.00	5.90	9	24.65	28.00	15	28.50	31.85
2	4.35	5.25	6	5.00	5.90	10	27.50	31.50	16	31.50	35.50
2 1/2	4.65	5.45	7	5.25	6.15	12	40.50	45.00	19	46.50	51.00
3	5.00	6.10	7 1/2	5.75	6.85	14	60.00	65.50	21	69.00	74.50
3 1/2	5.85	7.10	8 1/2	6.75	8.00	15	68.00	74.75	22 1/2	78.00	84.75
4	6.50	8.00	9	7.50	9.00	16	79.00	86.50	23 1/2	91.00	98.50
4 1/2	8.00	9.50	9 1/4	8.25	10.75	18	103.00	112.00	25	118.00	127.00
5	9.10	10.60	10	10.50	12.00	20	130.00	140.00	27 1/2	150.00	160.00
6	11.00	12.85	11	12.65	14.60	22	164.00	177.00	29 1/2	189.00	202.00
7	15.25	17.50	12 1/2	17.50	19.75	24	203.00	218.00	32	233.00	248.00

Larger sizes made to order. Prices on application. Furnished faced only, unless otherwise ordered.



Fig. 541
FLANGED LATERALS

STANDARD CAST IRON FLANGED FITTINGS

FOR STEAM WORKING
PRESSURES UP TO
125 POUNDS



Fig. 543
REDUCING FLANGED LATERALS
Reducing in Run or Branch

Size inches	No. 541			Diameter of Flanges inches	Specific dimensions and Tem- plates for drilling must be fur- nished. For list of reducing sizes car- ried in stock, see index.	No. 543	
	Faced each	Faced and Drilled each				Faced each	Faced and Drilled each
2	6.75	7.95	6				
2½	6.95	8.15	7			8.00	9.20
3	7.65	9.05	7½			8.75	10.15
3½	9.00	10.70	8½			10.35	12.05
4	10.00	12.00	9			11.50	13.50
4½	12.00	14.00	9½			12.75	15.75
5	13.75	15.75	10			15.75	17.75
6	16.75	19.25	11			19.25	21.75
7	23.00	26.00	12½			26.50	29.50
8	26.50	29.75	13½			30.50	33.75
9	37.50	42.00	15			43.00	47.50
10	42.00	47.50	16			48.00	53.50
12	61.50	67.50	19			71.00	77.00
14	91.00	98.50	21			105.00	112.50

Furnished faced only, unless otherwise ordered.

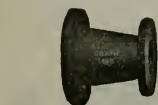


Fig. 547
FLANGED
TAPER REDUCERS

STANDARD CAST IRON FLANGED FITTINGS

FOR STEAM WORKING PRESSURES UP TO 125 POUNDS



Fig. 547A
FLANGED ECCENTRIC
TAPER REDUCERS

Size inches	Diameter of Flanges inches	Face to Face inches	No. 547		Size inches	Diameter of Flanges inches	Face to Face inches	No. 547		Size inches	Diameter of Flanges inches	Face to Face inches	No. 547	
			Faced each	Faced and Drilled each				Faced each	Faced and Drilled each				Faced each	Faced and Drilled each
3 x 2	7½ x 6	6	6.90	7.60	8 x 5	13½ x 10	11	24.00	25.60	16 x 10	23½ x 16	18	90.00	95.00
3½ x 2½	8½ x 7	6½	8.10	8.95	8 x 6	13½ x 11	11	24.00	25.60	16 x 12	23½ x 19	18	90.00	95.00
4 x 2	9 x 6	7	9.00	10.00	10 x 4	16 x 9	12	38.00	40.70	16 x 14	23½ x 21	18	90.00	95.00
4 x 2½	9 x 7	7	9.00	10.00	10 x 5	16 x 10	12	38.00	40.70	18 x 10	25 x 16	19	105.00	111.00
4 x 3	9 x 7½	7	9.00	10.00	10 x 6	16 x 11	12	38.00	40.70	18 x 12	25 x 19	19	105.00	111.00
5 x 2	10 x 6	8	12.50	13.50	10 x 8	16 x 13½	12	38.00	40.70	18 x 14	25 x 21	19	105.00	111.00
5 x 2½	10 x 7	8	12.50	13.50	12 x 5	19 x 10	14	56.00	59.00	18 x 16	25 x 23½	19	105.00	111.00
5 x 3	10 x 7½	8	12.50	13.50	12 x 6	19 x 11	14	56.00	59.00	20 x 12	27½ x 19	20	120.00	127.00
5 x 4	10 x 9	8	12.50	13.50	12 x 8	19 x 13½	14	56.00	59.00	20 x 14	27½ x 21	20	120.00	127.00
6 x 3	11 x 7½	9	15.25	16.55	12 x 10	19 x 16	14	56.00	59.00	20 x 16	27½ x 23½	20	120.00	127.00
6 x 3½	11 x 8½	9	15.25	16.55	14 x 6	21 x 11	16	70.00	73.75	20 x 18	27½ x 25	20	120.00	127.00
6 x 4	11 x 9	9	15.25	16.55	14 x 8	21 x 13½	16	70.00	73.75	22 x 14	29½ x 21	22	150.00	159.00
6 x 5	11 x 10	9	15.25	16.55	14 x 10	21 x 16	16	70.00	73.75	22 x 16	29½ x 23½	22	150.00	159.00
7 x 3	12½ x 7½	10	21.00	22.50	14 x 12	21 x 19	16	70.00	73.75	22 x 18	29½ x 25	22	150.00	159.00
7 x 4	12½ x 9	10	21.00	22.50	15 x 8	22½ x 13½	17	80.00	84.50	22 x 20	29½ x 27½	22	150.00	159.00
7 x 5	12½ x 10	10	21.00	22.50	15 x 10	22½ x 16	17	80.00	84.50	24 x 16	32 x 23½	24	190.00	200.00
7 x 6	12½ x 11	10	21.00	22.50	15 x 12	22½ x 19	17	80.00	84.50	24 x 18	32 x 25	24	190.00	200.00
8 x 8	13½ x 7½	11	24.00	25.60	15 x 14	22½ x 21	17	80.00	84.50	24 x 20	32 x 27½	24	190.00	200.00
8 x 4	13½ x 9	11	24.00	25.60	16 x 8	23½ x 13½	18	90.00	95.00	24 x 22	32 x 29½	24	190.00	200.00

CAST IRON FLANGES

NOT FACED

Fig. 148A
Common Flange

Fig. 148B. Floor Flange

Size Inches	Price Each	Size Inches	Price Each	Size Inches	Price Each	Size Inches	Price Each
$\frac{3}{8}$ x 3	\$0.10*	3 x 6 $\frac{1}{2}$	\$0.50	5 x 10	\$1.50	7 x 15	\$4.00
$\frac{1}{2}$ x 3 $\frac{1}{2}$	.15*	2 x 7	.62	6 x 10	1.50	8 x 15	4.00
$\frac{3}{4}$ x 3 $\frac{1}{2}$	.15*	2 $\frac{1}{2}$ x 7	.62	4 $\frac{1}{2}$ x 11	1.75	9 x 15	4.00
$\frac{3}{4}$ x 4	.22	3 x 7	.62	5 x 11	1.75	8 x 16	5.00
1 x 4	.16*	3 x 7 $\frac{1}{2}$	.75	6 x 11	1.75	9 x 16	5.00
$\frac{1}{4}$ x 4 $\frac{1}{2}$	.16*	2 x 8	.90	5 x 12	2.20	10 x 16	5.00
$\frac{1}{4}$ x 4 $\frac{1}{2}$	.25	2 $\frac{1}{2}$ x 8	.90	6 x 12	2.20	9 x 17	5.75
$\frac{1}{2}$ x 4 $\frac{1}{2}$	.22*	3 x 8	.90	7 x 12	2.20	10 x 17	5.75
$\frac{3}{4}$ x 5	.30	3 $\frac{1}{2}$ x 8	.90	5 x 12 $\frac{1}{2}$	2.20	10 x 18	7.00
1 x 5	.30	4 x 8	.90	6 x 12 $\frac{1}{2}$	2.20	12 x 18	7.00
$\frac{1}{4}$ x 5	.30	3 $\frac{1}{2}$ x 8 $\frac{1}{2}$	1.00	7 x 12 $\frac{1}{2}$	2.20	10 x 19	7.50
$\frac{1}{2}$ x 5	.30	4 x 8 $\frac{1}{2}$	1.00	6 x 13	2.80	12 x 19	7.50
2 x 5 $\frac{1}{2}$	.35*	3 x 9	1.15	7 x 13	2.80	12 x 20	8.50
1 x 6	.42	3 $\frac{1}{2}$ x 9	1.15	8 x 13	2.80	14 x 20	8.50
$\frac{1}{4}$ x 6	.40	4 x 9	1.15	6 x 13 $\frac{1}{2}$	2.80	14 x 21	9.50
$\frac{1}{2}$ x 6	.40	4 $\frac{1}{2}$ x 9	1.15	7 x 13 $\frac{1}{2}$	2.80	15 x 21	9.50
2 x 6	.42	4 $\frac{1}{2}$ x 9 $\frac{1}{4}$	1.25	8 x 13 $\frac{1}{2}$	2.80	15 x 22 $\frac{1}{4}$	14.00
$\frac{1}{2}$ x 6	.42	3 $\frac{1}{2}$ x 10	1.50	6 x 14	3.25	16 x 23 $\frac{1}{2}$	18.00
2 x 6 $\frac{1}{2}$	.50	4 x 10	1.50	7 x 14	3.25		
$\frac{1}{2}$ x 6 $\frac{1}{2}$	.50	4 $\frac{1}{2}$ x 10	1.50	8 x 14	3.25		

*Those marked * are Floor Flanges, drilled for screw.



Fig. 147

EXTRA HEAVY FLANGE
UNIONS
CAST IRON

Faced. Gasket Extra

For Steam Working Pressures up to
250 Pounds

Size Inches	Diam. of Flanges Inches	Number of Bolts	Price Each
$\frac{1}{2}$	3	3	\$ 0.60
$\frac{3}{4}$	3 $\frac{1}{4}$	4	.70
1	3 $\frac{3}{4}$	4	.80
$1\frac{1}{4}$	4 $\frac{1}{2}$	4	1.00
$1\frac{1}{2}$	4 $\frac{3}{4}$	4	1.15
2	5 $\frac{1}{2}$	5	1.50
$2\frac{1}{2}$	6	5	1.90
3	6 $\frac{1}{2}$	6	2.25
$3\frac{1}{2}$	7 $\frac{1}{2}$	6	2.70
4	8	7	3.15
$4\frac{1}{2}$	8 $\frac{3}{4}$	8	4.00
5	9 $\frac{1}{2}$	8	4.75
6	10 $\frac{1}{2}$	9	6.00
7	12	10	8.25
8	13 $\frac{1}{4}$	10	10.50
9	14 $\frac{1}{4}$	12	15.00
10	15 $\frac{1}{4}$	12	17.25
12	18	14	24.00



Fig. 146

FLANGE UNIONS
CAST IRON

Faced. Gasket Extra

For Steam Working Pressures up to 125 Pounds

Size Inches	Diam. of Flanges Inches	Number of Bolts	Price Each	Price Galvanized Each
$\frac{1}{2}$	3	3	\$0.40	\$0.80
$\frac{3}{4}$	3 $\frac{1}{2}$	3	.46	.92
1	3 $\frac{3}{4}$	3	.52	1.04
$1\frac{1}{4}$	4 $\frac{1}{2}$	4	.64	1.28
$1\frac{1}{2}$	4 $\frac{3}{4}$	4	.78	1.56
2	5 $\frac{1}{4}$	4	1.00	2.00
$2\frac{1}{2}$	6	4	1.25	2.50
3	6 $\frac{3}{4}$	4	1.50	3.00
$3\frac{1}{2}$	6 $\frac{1}{2}$	4	1.80	3.60
4	8	5	2.10	4.20
$4\frac{1}{2}$	8 $\frac{3}{4}$	5	2.70	5.40
5	9 $\frac{1}{2}$	5	3.15	6.30
6	10 $\frac{1}{2}$	6	3.95	7.90
7	12	7	5.50	11.00
8	13 $\frac{3}{4}$	8	7.00	14.00
9	14 $\frac{1}{4}$	9	10.00	20.00
10	16	10	11.50	23.00
12	18 $\frac{1}{4}$	12	16.00	32.00
14	20 $\frac{1}{2}$	14	28.00	56.00
15	20 $\frac{3}{4}$	14	35.00	70.00
16	23	16	60.00	



Fig. 555A

16 INCH O. D. AND SMALLER

STANDARD CAST IRON BLIND FLANGES



Fig. 555B

19 INCH O. D. AND LARGER

Size of Valve or Fitting and O. D. of Flange Inches	Faced Each	Faced and Drilled Each	Bolts for One Joint Per Set	Size of Valve or Fitting and O. D. of Flange Inches	Faced Each	Faced and Drilled Each	Bolts for One Joint Per Set
1x4			.12	12x19	9.75	10.90	1.70
1 1/4 x 4 1/2			.12	14x21	13.50	14.85	2.50
1 1/2 x 5			.16	15x22 1/2	17.00	18.70	3.30
2x6	1.15	1.40	.25	16x23 1/2	20.00	21.80	3.30
2 1/2 x 7	1.30	1.55	.25	18x25	24.00	26.00	5.00
3x7 1/2	1.40	1.70	.25	20x27 1/2	28.00	30.50	6.20
3 1/2 x 8 1/2	1.80	2.15	.25	22x29 1/2	33.00	36.00	8.40
4x9	2.00	2.45	.50	24x32	40.00	43.50	8.40
4 1/2 x 9 1/2	2.20	2.65	.75	26x34 1/2			10.50
5x10	2.40	2.85	.75	28x36 1/2			12.25
6x11	3.00	3.50	.75	30x38 1/2			21.00
7x12 1/2	4.00	4.50	.75	32x41 1/2			26.00
8x13 1/2	4.60	5.30	.80	34x43 1/2			30.00
9x15	5.75	6.55	1.20	36x46			31.00
10x16	6.75	7.75	1.60				

Furnished smooth face and not drilled, unless otherwise specified.



Fig. 230A

CORRUGATED COPPER
FULL FACE GASKET

GASKETS

FOR STANDARD AND LOW PRESSURE

FLANGED VALVES AND FITTINGS

NET PRICES AND DIMENSIONS



Fig. 230B

RUBBER
RING GASKET

RING GASKETS					FULL FACE GASKETS				
Size of Valve or Fitting Inches	1/16 In. Cloth Insert'n Gaskets Each	1/16 In. "CC" Gaskets Each	Corrugated Copper Gaskets Each	1/16 In. Banner Gaskets Each	Inside and Outside Diameters Inches	1/16 In. Cloth Insert'n Gaskets Each	1/16 In. "CC" Gaskets Each	Corrugated Copper Gaskets Each	1/16 In. Banner Gaskets Each
3/4	.02	.04	.02	.06	3/2 x 1 1/4	.04	.08	.05	.12
1	.02	.04	.02	.06	1 1/2 x 2	.06	.12	.05	.12
1 1/4	.03	.06	.03	.08	1 1/2 x 2 1/2	.06	.12	.06	.16
1 1/2	.03	.06	.04	.10	1 1/2 x 3	.06	.12	.07	.20
2	.03	.08	.05	.12	2 x 4 1/2	.08	.16	.10	.24
2 1/2	.04	.10	.06	.15	2 1/2 x 4 1/2	.10	.20	.13	.30
3	.05	.12	.07	.19	3 x 5 1/2	.12	.24	.14	.38
3 1/2	.06	.16	.09	.25	3 1/2 x 6 1/2	.13	.28	.18	.50
4	.07	.18	.10	.30	4 x 6 1/2	.15	.35	.19	.60
4 1/2	.07	.20	.11	.32	4 1/2 x 7	.16	.40	.20	.64
5	.08	.24	.12	.35	5 x 7 1/2	.18	.48	.23	.70
6	.10	.28	.13	.41	6 x 8 1/2	.20	.56	.26	.82
7	.12	.32	.15	.50	7 x 10	.25	.64	.32	1.00
8	.13	.35	.17	.55	8 x 11	.28	.70	.36	1.10
9	.16	.40	.23	.65	9 x 12 1/2	.35	.90	.46	1.30
10	.18	.48	.25	.80	10 x 13 1/2	.38	.95	.50	1.60
12	.25	.60	.36	1.00	12 x 16 1/2	.50	1.20	.65	2.00
14	.30	.75	.38	1.25	14 x 17 1/2	.55	1.35	.75	2.25
15	.32	.85	.42	1.50	15 x 19	.65	1.55	.80	2.75
16	.35	.95	.45	1.75	16 x 20 1/2	.75	1.75	.90	3.25
18	.37	1.10	.50	1.90	18 x 21 1/2	.80	1.90	1.00	3.50
20	.44	1.20	.55	2.10	20 x 23 1/2	.85	2.10	1.10	3.75
22	.48	1.25	.60	2.50	22 x 26	.90	2.20	1.20	4.50
24	.60	1.40	.70	2.80	24 x 28 1/2	1.10	2.50	1.40	5.00
26	.70	1.50	.75	3.50	26 x 30 1/2	1.40	3.50	1.50	7.00
28	.80	2.00	1.00	4.00	28 x 32 1/2	1.50	3.75	1.75	8.00
30	.90	2.10	1.05	4.00	30 x 34 1/2	1.65	4.25	1.85	8.00
32	1.00	2.75	1.25		32 x 37	1.80	5.50	2.00	
34	1.15	3.00	1.50		34 x 39	2.00	6.00	3.50	
36	1.25	3.25	1.60		36 x 41 1/2	2.20	6.50	3.75	
38	1.35	3.50	2.25		38 x 43 1/2		7.00	4.10	
40	1.45	3.75	2.50		40 x 45 1/2		7.50	4.40	
42	1.50	3.85	2.75		42 x 47 1/2		7.75	4.75	
44		4.00	3.00		44 x 50 1/2		8.00	5.25	
46		4.25	3.10		46 x 52 1/2		8.50	5.50	
48		4.50	3.25		48 x 54 1/2		9.00	5.75	
50		5.00	4.00		50 x 56 1/2		10.00	7.00	

Ring gaskets will always be furnished, unless otherwise ordered.

The commercial corrugated copper gasket is made from 27 gauge sheet copper, and this gauge will be furnished on all orders for low pressure or standard copper gaskets. We can furnish these gaskets made from heavier sheet copper at an extra price. We can furnish gaskets made from any sheet rubber or metal that is manufactured.

Full Face Gaskets are furnished without bolt holes; bolt holes will be punched at an extra price when so ordered.

ALL THE ABOVE PRICES ARE NET. SUBJECT TO CHANGE WITHOUT NOTICE

STANDARD COMPANION FLANGES

CAST IRON, FERROSTEEL, CAST STEEL, FORGED STEEL

AND MALLEABLE IRON

For Steam Working Pressures up to 125 Pounds



Fig. 225A
Back View
Showing Hub



Fig. 225B
Smooth Face

Size inches	No. 553 Cast Iron		No. 558 Ferrosteeel		No. 560 Cast Steel		No. 556 Forged Steel		Threading Pipe, Making On and Refac- ing, not in- cluding Flange Net each
	Faced each	Faced and Drilled each	Faced each	Faced and Drilled each	Faced each	Faced and Drilled* each	Faced each	Faced and Drilled each	
1x4	.55	.80	.70	1.00	5.00	5.50			.40
1 1/4 x 4 1/2	.60	.85	.75	1.05	5.40	5.90			.40
1 1/2 x 5	.65	.90	.80	1.10	5.90	6.50			.45
2x6	.75	1.00	.95	1.25	6.90	7.50	10.40	11.00	.50
2 1/2 x 7	.85	1.10	1.05	1.35	7.30	8.50	11.80	13.00	.55
3x7 1/2	.95	1.25	1.20	1.55	8.70	10.00	13.70	15.00	.60
3 1/2 x 8 1/2	1.20	1.55	1.50	1.95	12.10	13.50	17.60	19.00	.65
4x9	1.35	1.80	1.70	2.25	14.80	16.50	18.30	20.00	.70
4 1/2 x 9 1/2	1.45	1.90	1.80	2.35	15.80	17.50	20.30	22.00	.75
5x10	1.60	2.05	2.00	2.55	16.80	18.50	22.30	24.00	.85
6x11	2.00	2.50	2.50	3.10	20.40	22.00	25.40	27.00	1.00
7x12 1/2	2.65	3.25	3.30	4.05	24.70	27.50	32.20	32.00	1.10
8x13 1/2	3.10	3.80	3.90	4.75	27.00	30.00	37.00	35.00	1.30
9x15	3.85	4.65	4.80	5.80	29.50	32.50	37.00	40.00	1.55
10x16	4.50	5.50	5.65	6.85	34.50	37.50	45.00	48.00	1.70
12x19	6.50	7.65	8.15	9.55	46.00	50.00	56.00	60.00	2.40
14x21	9.00	10.35	11.25	13.00	55.50	60.00	75.50	80.00	3.10
15x21	11.50	13.20	14.50	16.50	64.00	70.00			3.10
15x22 1/2	11.50	13.20	14.50	16.50	64.00	70.00			3.25
16x23 1/2	13.50	15.30	17.00	19.00	78.00	85.00			4.25
18x25	16.00	18.00	20.00	22.50	98.00	105.00			6.25
20x27 1/2	19.00	21.50	24.00	27.00	117.00	125.00			7.50
22x29 1/2	22.00	25.00	27.50	31.00	140.00	150.00			8.00
24x32	27.00	30.50	34.00	38.00	165.00	175.00			10.00

For Malleable Iron Flanges No. 559, use double the list prices of No. 553 Cast Iron Flanges and discount applying to Malleable Iron Flanges.

*Cast Steel Flanges when ordered faced and drilled, will always be furnished with bolt holes spot faced, at an extra charge of five cents each net per hole, unless otherwise ordered.

Furnished smooth faced and not drilled, unless otherwise specified.

For dimensions of flanges, see index.

STANDARD REDUCING COMPANION FLANGES

CAST IRON, WITH RIBS

For Steam Working Pressures up to 125 Pounds



Fig. 557

Size inches	No. 557		Size inches	No. 557		Size inches	No. 557		Size inches	No. 557	
	Faced each	Faced and Drilled each		Faced each	Faced and Drilled each		Faced each	Faced and Drilled each		Faced each	Faced and Drilled each
1x6	1.30	1.55	3 1/2 x 10	2.65	3.10	7x15	6.35	7.15	12x22 1/2	19.00	20.70
1 1/4 x 6	1.30	1.55	4x10	2.65	3.10	8x15	6.35	7.15	14x22 1/2	19.00	20.70
1 1/2 x 6	1.30	1.55	4 1/2 x 10	2.65	3.10	2 1/2 x 16	7.45	8.45	10x23 1/2	22.00	23.80
1 1/2 x 7	1.45	1.70	2x11	3.30	3.80	3x16	7.45	8.45	12x23 1/2	22.00	23.80
2x7	1.45	1.70	2 1/2 x 11	3.30	3.80	3 1/2 x 16	7.45	8.45	14x23 1/2	22.00	23.80
1 1/2 x 7 1/2	1.55	1.85	3x11	3.30	3.80	4x16	7.45	8.45	15x23 1/2	22.00	23.80
2 1/2 x 7 1/2	1.55	1.85	3 1/2 x 11	3.30	3.80	5x16	7.45	8.45	12x25	26.50	28.50
2 1/2 x 7 1/2	1.55	1.85	4x11	3.30	3.80	6x16	7.45	8.45	14x25	26.50	28.50
2x8 1/2	2.00	2.35	4 1/2 x 11	3.30	3.80	7x16	7.45	8.45	15x25	26.50	28.50
2 1/2 x 8 1/2	2.00	2.35	5x11	3.30	3.80	8x16	7.45	8.45	16x25	26.50	28.50
3x8 1/2	2.00	2.35	4x12 1/2	4.40	5.00	9x16	7.45	8.45	14x27 1/2	31.00	33.50
2x9	2.20	2.65	4 1/2 x 12 1/2	4.40	5.00	6x19	10.75	11.90	15x27 1/2	31.00	33.50
2 1/2 x 9	2.20	2.65	5x12 1/2	4.40	5.00	7x19	10.75	11.90	16x27 1/2	31.00	33.50
3x9	2.20	2.65	6x12 1/2	4.40	5.00	8x19	10.75	11.90	18x27 1/2	31.00	33.50
2 1/2 x 9 1/2	2.40	2.85	2x13 1/2	5.10	5.80	9x19	10.75	11.90	15x29 1/2	36.00	39.00
3x9 1/2	2.40	2.85	3x13 1/2	5.10	5.80	10x19	10.75	11.90	16x29 1/2	36.00	39.00
3 1/2 x 9 1/2	2.40	2.85	4x13 1/2	5.10	5.80	8x21	15.00	16.35	18x29 1/2	36.00	39.00
4x9 1/2	2.40	2.85	5x13 1/2	5.10	5.80	9x21	15.00	16.35	20x29 1/2	36.00	39.00
2x10	2.65	3.10	6x13 1/2	5.10	5.80	10x21	15.00	16.35	14x32	44.00	47.50
2 1/2 x 10	2.65	3.10	7x13 1/2	5.10	5.80	8x22 1/2	19.00	20.70	16x32	44.00	47.50
3x10	2.65	3.10	6x17	6.35	7.15	10x22 1/2	19.00	20.70	18x32	44.00	47.50
									20x32	44.00	47.50

Furnished smooth face and not drilled, unless otherwise specified.

EXTRA HEAVY COMPANION FLANGES



Fig. 151E
Back View,
Showing Hub

Cast iron, ferrosteel, cast steel, forged steel and malleable iron. For
steam working pressures up to 250 lbs.



Fig. 151E
Raised Face

Size, inches	No. 151E Cast Iron		No. 251E Ferrosteel		No. 281D Cast Steel		No. 291E Forged Steel		Threading Pipe, Making on and Refacing, not including Flange Net, Each
	Faced Each	Faced and Drilled Each	Faced Each	Faced and Drilled Each	Faced Each	Faced and Drilled Each	Faced Each	Faced and Drilled Each	
1 x 4 1/2	.95	1.30	1.20	1.65	5.00	5.50	7.50	8.00	.60
1 1/4 x 5	1.00	1.35	1.25	1.70	5.40	6.00	8.40	9.00	.60
1 1/2 x 6	1.10	1.45	1.35	1.80	5.90	6.50	9.40	10.00	.65
2 x 6 1/2	1.25	1.60	1.55	2.00	6.90	7.50	10.40	11.00	.70
2 1/2 x 7 1/2	1.40	1.75	1.75	2.20	7.30	8.50	11.80	13.00	.75
3 x 8 1/4	1.60	2.05	2.00	2.55	8.70	10.00	12.70	15.00	.85
3 1/2 x 9	2.00	2.55	2.50	3.20	12.10	13.50	17.60	19.00	.90
4 x 10	2.25	2.95	2.80	3.70	14.80	16.50	18.30	20.00	.95
4 1/2 x 10 1/2	2.40	3.10	3.00	3.90	15.80	17.50	20.30	22.00	1.00
5 x 11	2.65	3.35	3.30	4.20	16.80	18.50	22.30	24.00	1.10
6 x 12 1/2	3.30	4.05	4.10	5.05	20.40	22.00	25.40	27.00	1.25
7 x 14	4.40	5.20	5.50	6.60	24.70	27.50	27.20	32.00	1.35
8 x 15	5.10	6.15	6.40	7.70	27.00	30.00	32.00	35.00	1.55
9 x 16 1/4	6.30	7.50	7.90	9.40	29.50	32.50	37.00	40.00	1.80
10 x 17 1/2	7.40	8.90	9.25	11.00	34.50	37.50	45.00	48.00	2.00
12 x 20 1/4	10.75	12.50	13.50	15.50	46.00	50.00	56.00	60.00	2.75
14 x 23	15.00	17.00	18.50	21.00	55.50	60.00	75.50	80.00	3.50
15 x 24 1/2	19.00	21.50	24.00	27.00	64.00	70.00	84.00	90.00	3.75
16 x 25 1/2	22.25	25.00	28.00	31.00	78.00	85.00	93.00	100.00	4.75
18 x 28	26.00	29.00	32.50	36.00	98.00	105.00	118.00	125.00	7.00
20 x 30 1/2	31.00	35.00	39.00	44.00	117.00	125.00	142.00	150.00	8.25
22 x 33	36.00	41.00	45.00	51.00	140.00	150.00			9.50
24 x 36	45.00	50.00	56.00	62.00	165.00	175.00			11.00

Furnished faced only, unless otherwise ordered.

For malleable iron flanges (No. 271E) use double the list prices of No. 151E cast iron flanges and the discount applying to malleable iron flanges.

*Cast steel flanges when ordered faced and drilled, will always be furnished with bolt holes spot faced, at an extra charge of \$0.05 each net per hole, unless otherwise ordered.



Fig. 155E

EXTRA HEAVY REDUCING COMPANION FLANGES

Cast iron, with ribs, No. 155E. For steam working pressures up to 250 lbs.

Size inches	No. 155E		Size, Inches	No. 155E		Size inches	No. 155E		Size Inches	No. 155E	
	Faced Each	Faced and Drilled Each		Faced Each	Faced and Drilled Each		Faced Each	Faced and Drilled Each		Faced Each	Faced and Drilled Each
1 1/4 x 6	1.80	2.15	2 1/2 x 11	4.40	5.10	4 x 16 1/4	10.50	11.70	10 x 24 1/2	31.50	34.00
1 1/2 x 6 1/2	2.10	2.45	3 x 11	4.40	5.10	5 x 16 1/4	10.50	11.70	12 x 24 1/2	31.50	34.00
1 3/4 x 7 1/4	2.30	2.65	3 1/2 x 11	4.40	5.10	6 x 16 1/4	10.50	11.70	14 x 24 1/2	31.50	34.00
2 x 7 1/2	2.30	2.65	4 x 11	4.40	5.10	7 x 16 1/4	10.50	11.70	10 x 25 1/2	37.00	39.75
1 1/2 x 8 1/4	2.65	3.10	4 1/2 x 11	4.40	5.10	8 x 16 1/4	10.50	11.70	12 x 25 1/2	37.00	39.75
2 x 8 3/4	2.65	3.10	2 x 12 1/2	5.50	6.25	5 x 17 1/2	12.00	13.50	14 x 25 1/2	37.00	39.75
2 1/2 x 8 1/4	2.65	3.10	2 1/2 x 12 1/2	5.50	6.25	6 x 17 1/2	12.00	13.50	15 x 25 1/2	37.00	39.75
2 x 9	3.30	3.85	3 x 12 1/2	5.50	6.25	7 x 17 1/2	12.00	13.50	12 x 28	43.00	46.00
2 1/2 x 9	3.30	3.85	4 x 12 1/2	5.50	6.25	8 x 17 1/2	12.00	13.50	14 x 28	43.00	46.00
2 x 9	3.30	3.85	4 1/2 x 12 1/2	5.50	6.25	9 x 17 1/2	12.00	13.50	15 x 28	43.00	46.00
2 x 10	3.70	4.40	5 x 12 1/2	5.50	6.25	6 x 18 1/2	17.50	19.25	16 x 28	43.00	46.00
2 1/2 x 10	3.70	4.40	4 1/2 x 14	7.25	8.15	7 x 20 1/2	17.50	19.25	14 x 30 1/2	51.00	55.00
3 x 10	3.70	4.40	5 x 14	7.25	8.15	8 x 20 1/2	17.50	19.25	15 x 30 1/2	51.00	55.00
3 1/2 x 10	3.70	4.40	6 x 14	7.25	8.15	9 x 20 1/2	17.50	19.25	16 x 30 1/2	51.00	55.00
2 x 10 1/2	4.00	4.70	3 x 15	8.40	9.45	10 x 20 1/2	17.50	19.25	18 x 30 1/2	51.00	55.00
2 1/2 x 10 1/2	4.00	4.70	3 1/2 x 15	8.40	9.45	8 x 23	25.00	27.00	16 x 33	60.00	65.00
3 x 10 1/2	4.00	4.70	4 x 15	8.40	9.45	9 x 23	25.00	27.00	18 x 33	60.00	65.00
3 1/2 x 10 1/2	4.00	4.70	5 x 15	8.40	9.45	10 x 23	25.00	27.00	20 x 33	60.00	65.00
4 x 10 1/2	4.00	4.70	6 x 15	8.40	9.45	12 x 23	25.00	27.00	18 x 36	74.00	79.00
2 x 11	4.40	5.10	7 x 15	8.40	9.45	8 x 24 1/2	31.50	34.00	20 x 36	74.00	79.00

Furnished faced only, unless otherwise ordered.

GASKETS

FOR MEDIUM AND EXTRA HEAVY FLANGED VALVES AND FITTINGS
NET PRICES AND DIMENSIONS

Ring Gaskets					Full Face Gaskets			
Size of Valve or Fitting inches	"CC" Gaskets each	Corrugated Copper Gaskets each	1/16 Inch Banner Gaskets each	Inside and Outside Diameters inches	"CC" Gaskets each	Corrugated Copper Gaskets each	1/16 Inch Banner Gaskets each	Inside and Outside Diameters inches
1	.08	.04	.08	1 x 2 1/2	.18	.09	.18	1 x 4 1/2
1 1/4	.08	.04	.10	1 1/4 x 3 1/4	.18	.09	.22	1 1/4 x 5
1 1/2	.08	.04	.12	1 1/2 x 3 3/4	.18	.09	.27	1 1/2 x 6
2	.09	.05	.15	2 x 4 1/2	.21	.12	.35	2 x 6 1/2
2 1/2	.12	.06	.19	2 1/2 x 5 1/4	.25	.15	.38	2 1/2 x 7 1/2
3	.15	.08	.24	3 x 5 7/8	.32	.18	.50	3 x 8 3/4
3 1/2	.16	.09	.27	3 1/2 x 6 1/2	.35	.21	.60	3 1/2 x 9
4	.18	.10	.33	4 x 7 1/2	.45	.25	.75	4 x 10
4 1/2	.21	.12	.35	4 1/2 x 7 3/4	.47	.27	.80	4 1/2 x 10 1/2
5	.25	.15	.45	5 x 8 1/2	.50	.30	.90	5 x 11
6	.30	.18	.55	6 x 9 3/4	.60	.36	1.10	6 x 12 1/2
7	.40	.21	.70	7 x 11	.75	.45	1.35	7 x 14
8	.42	.24	.75	8 x 12 1/4	.80	.50	1.45	8 x 15
9	.48	.27	.85	9 x 13	.95	.55	1.70	9 x 16 1/4
10	.55	.33	1.00	10 x 14 1/4	1.05	.65	1.90	10 x 17 1/2
12	.70	.42	1.25	12 x 16 1/4	1.40	.80	2.50	12 x 20 1/2
14	1.00	.55	1.65	13 1/4 x 19 1/4	1.70	1.00	2.75	13 1/4 x 23
15	1.05	.60	1.80	14 1/4 x 20 1/4	1.90	1.10	3.35	14 1/4 x 24 1/2
16	1.20	.66	2.10	15 1/4 x 21 1/4	2.00	1.20	3.50	15 1/4 x 25 1/2
18	1.35	.75	2.40	17 1/4 x 23 1/4	2.20	1.30	4.00	17 1/4 x 28
20	1.45	.85	2.75	19 1/4 x 25 1/4	2.50	1.50	4.25	19 1/4 x 30 1/2
22	1.55	.90	3.00	21 1/4 x 27 1/4	2.80	1.60	5.50	21 1/4 x 33
24	1.90	1.05	3.50	23 1/4 x 30 3/4	3.15	1.90	6.00	23 1/4 x 36

Ring Gaskets cover the faces of flanges inside of bolt holes, and will always be furnished unless otherwise ordered. Corrugated Copper Gaskets are made from 27 gauge copper. We can, however, furnish these Gaskets made from a heavier gauge of copper, at an extra price, with either plain or corrugated faces, and hard or annealed. Special Corrugated Sheet Iron, or Steel Gaskets, for cyanide piping, made to order. We can furnish Gaskets, at special prices, made from any brand of sheet rubber manufactured. See Index.

Full Face Gaskets are furnished without bolt holes; bolt holes will be punched, at an extra price, when so ordered.

GASKETS

FOR MEDIUM AND EXTRA HEAVY FLANGED VALVES AND FITTINGS
NET PRICES AND DIMENSIONS

Gaskets for Male and Female Joints					Gaskets for Tongued and Grooved Joints			
Size of Valve or Fitting inches	"CC" Gaskets each	Corrugated Copper Gaskets each	1/16 Inch Banner Gaskets each	Inside and Outside Diameters inches	"CC" Gaskets each	Corrugated Copper Gaskets each	1/16 Inch Banner Gaskets each	Inside and Outside Diameters inches
1	.05	.02	.05	1 x 2 1/2	.03	.02	.03	1 1/4 x 2 1/2
1 1/4	.05	.02	.06	1 1/4 x 2 3/4	.03	.02	.03	2 1/4 x 2
1 1/2	.05	.03	.07	1 1/2 x 3 1/4	.03	.03	.04	2 3/4 x 3 3/4
2	.05	.04	.08	2 x 3 3/4	.03	.03	.05	3 1/4 x 4 1/4
2 1/2	.06	.04	.10	2 1/2 x 4 1/4	.04	.04	.07	3 3/4 x 4 3/4
3	.08	.05	.13	3 x 5	.05	.04	.08	4 1/4 x 5 1/4
3 1/2	.10	.06	.17	3 1/2 x 5 1/4	.05	.05	.09	4 3/4 x 5 3/4
4	.11	.07	.20	4 x 6	.06	.05	.11	5 1/4 x 6 1/4
4 1/2	.13	.08	.21	4 1/2 x 6 1/2	.06	.05	.11	5 3/4 x 6 3/4
5	.15	.08	.27	5 x 7 1/4	.06	.06	.12	6 1/4 x 7 1/4
6	.16	.10	.30	6 x 8 3/4	.07	.06	.13	7 1/4 x 8 1/4
7	.20	.12	.35	7 x 9 3/4	.08	.08	.14	8 1/4 x 9 3/4
8	.25	.15	.45	8 x 10 3/4	.11	.09	.18	9 3/4 x 10 3/4
9	.27	.18	.48	9 x 11 3/4	.12	.10	.21	10 3/4 x 11 3/4
10	.32	.21	.60	10 x 12 3/4	.15	.14	.25	11 3/4 x 13 1/4
12	.44	.27	.75	12 x 15 1/4	.18	.15	.30	13 3/4 x 15 1/4
14	.48	.30	.80	13 3/4 x 16 1/4	.20	.18	.35	15 1/4 x 17 3/4
15	.50	.33	.90	14 1/4 x 17 1/4	.22	.20	.40	17 1/4 x 18 3/4
16	.58	.36	1.05	15 1/4 x 18 1/4	.28	.23	.50	18 3/4 x 20 1/4
18	.70	.45	1.20	17 1/4 x 21	.35	.30	.70	20 3/4 x 22 3/4
20	.80	.50	1.50	19 1/4 x 23	.40	.36	.80	22 3/4 x 24 3/4
22	1.00	.60	2.00	21 1/4 x 25 1/4	.45	.40	.90	24 1/4 x 26 1/4
24	1.15	.70	2.25	23 1/4 x 27 1/4	.50	.42	1.00	26 1/4 x 28 1/4

WE RECOMMEND BANNER GASKETS FOR THE MOST SEVERE WORK

DRAINAGE FITTINGS **CAST IRON** **Screwed for Wrought Pipe**



Fig. 1000
90° Elbows



Fig. 1003
45° Elbows



Fig. 1002
60° Elbows



Fig. 1006
11 1/4° Elbows



Fig. 1005
22 1/2° Elbows

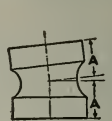


Fig. 1007
5 1/2° Elbows

90° AND 45° ELBOWS

Size	1 1/4	1 1/2	2	2 1/2	3	4	5	6	7	8	10	12	14
Dimensions A, No. 1000.....inches	1 3/4	2 1/8	2 1/8	2 1/8	3 1/8	4 1/8	5 1/8	6 1/8	7 1/8	8 1/8	10 1/8	12 1/8	14 1/8
Dimensions A, No. 1003.....inches	1 3/4	1 7/8	1 3/4	2 1/8	2 3/8	2 3/8	3 1/8	3 1/8	3 1/8	4 1/8	4 1/8	5 1/8	5 1/8
Price.....each	.30	.38	.57	1.20	1.45	2.30	4.25	6.25	11.50	15.00	31.00	47.50	65.00
Price, galvanized.....each	.52	.67	1.00	2.10	2.55	4.00	7.40	11.00	20.00	26.25	54.00	83.00	114.00

The 90° elbows are tapped, pitched 1/4 inch to the foot.

60° AND 11 1/4° ELBOWS

Size	1 1/4	1 1/2	2	2 1/2	3	4	5	6	7	8	10	12	14
Dimensions A, No. 1002.....inches	1 3/4	1 3/4	2	2 1/2	2 3/8	3 1/8	3 1/8	4 1/8	4 1/8	5 1/8	6 1/8	7 1/8	8 1/8
Dimensions A, No. 1006.....inches	1 3/4	1 3/8	1 3/8	1 3/8	1 3/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8
Price.....each	.30	.38	.57	1.20	1.45	2.30	4.25	6.25	11.50	15.00	31.00	47.50	65.00
Price, galvanized.....each	.52	.67	1.00	2.10	2.55	4.00	7.40	11.00	20.00	26.25	54.00	83.00	114.00

22 1/2° ELBOWS

Size	1 1/4	1 1/2	2	2 1/2	3	4	5	6	7	8	10	12	14
Dimensions A.....inches	1 3/4	1 3/4	2	2 1/2	2 3/8	3 1/8	3 1/8	4 1/8	4 1/8	5 1/8	6 1/8	7 1/8	8 1/8
Price.....each	.30	.38	.57	1.20	1.45	2.30	4.25	6.25	11.50	15.00	31.00	47.50	65.00
Price, galvanized.....each	.52	.67	1.00	2.10	2.55	4.00	7.40	11.00	20.00	26.25	54.00	83.00	114.00

5 1/2° ELBOWS

Size	1 1/4	1 1/2	2	2 1/2	3	4	5	6	7	8	10	12	14
Dimensions A.....inches	1 3/4	1 3/4	2	2 1/2	2 3/8	3 1/8	3 1/8	4 1/8	4 1/8	5 1/8	6 1/8	7 1/8	8 1/8
Price.....each	.30	.38	.57	1.20	1.45	2.30	4.25	6.25	11.50	15.00	31.00	47.50	65.00
Price, galvanized.....each	.52	.67	1.00	2.10	2.55	4.00	7.40	11.00	20.00	26.25	54.00	83.00	114.00

Dimensions subject to a slight variation and change without notice.



Fig. 1001
90° Long Turn Elbows

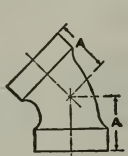


Fig. 1004
45° Long Turn Elbows

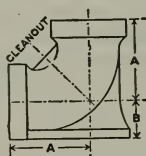


Fig. 1056
With Base

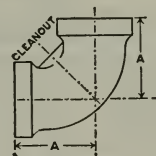


Fig. 1047
Without Base

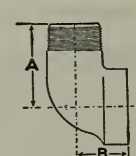


Fig. 1057
90° Street Elbow



Fig. 1058
45° Street Elbow

90° LONG TURN ELBOWS

Size	1 1/4	1 1/2	2	2 1/2	3	4	5	6	7	8	10	12	14
Dimensions A.....inches	2 1/4	2 1/4	3 1/8	3 1/8	4 1/8	5 1/8	6 1/8	7 1/8	8 1/8	9 1/8	11 1/8	13 1/8	14 1/8
Price.....each	.35	.42	.65	1.40	1.75	2.75	5.25	7.50	13.50	19.00	38.00	57.50	75.00
Price, galvanized.....each	.60	.72	1.15	2.45	3.10	4.80	9.20	13.15	23.50	33.25	66.50	100.00	130.00

The 90° Long Turn Elbows are tapped, pitched 1/4 inch to the foot.

45° LONG TURN ELBOWS

Size	1 1/4	1 1/2	2	2 1/2	3	4	5	6	7	8	10	12	14
Dimensions A.....inches	1 3/4	2 1/4	2 1/4	2 1/4	2 3/8	3 1/8	4 1/8	5 1/8	6 1/8	7 1/8	8 1/8	9 1/8	10 1/8
Price.....each	.42	.65	1.40	1.75	2.75	5.25	7.50	13.50	19.00	38.00	57.50	75.00	100.00
Price, galvanized.....each	.72	1.15	2.45	3.10	4.80	9.20	13.15	23.50	33.25	66.50	100.00	130.00	170.00

90° LONG TURN ELBOWS WITH CLEANOUT

Size	inches	4
Dimensions A.....inches	6 1/4	
Dimensions B.....inches	2 1/2	
Size of cleanout.....inches	2	
No. 1047.....each	5.00	
No. 1047, galvanized.....each	8.75	
No. 1056.....each	7.00	
No. 1056, galvanized.....each	12.25	

STREET ELBOWS

Size	inches	1 1/2
Dimension A.....inches	2 1/8	
Dimension B.....inches	1 1/8	
Dimension C.....inches	2	
Dimension D.....inches	1 1/4	
Price.....each	.40	
Price, galvanized.....each	.70	

Dimensions subject to a slight variation and change without notice.

DRAINAGE FITTINGS

CAST IRON. SCREWED FOR WROUGHT PIPE

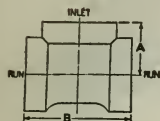


Fig. 1017

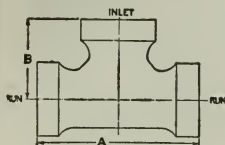


Fig. 1018

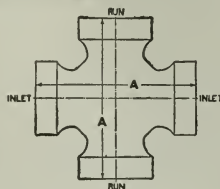


Fig. 1019

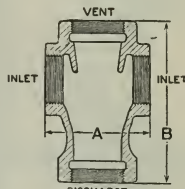


Fig. 1046

TEES

No. 1017

Size	inches	1 1/2	2	2x1 1/4	2x1 1/2	2 1/2	2 1/2x2	3	3x1 1/2	3x2
Dimension A	inches	2 1/8	2 1/8		2 1/4	2 1/8		3 1/8		3
Dimension B	inches	4 3/4	4 3/4		4 1/4	5 3/4		6 3/4		5 1/2
Price	each	.55	.80	.90	.90	1.50	1.65	2.00	2.20	2.20
Price, galvanized	each	1.00	1.40	1.60	1.60	2.50	2.75	3.50	3.85	3.85

Size	inches	4	4x2	4x3	5	5x2	5x3	5x4	6	7
Dimension A	inches	4	3 1/8	3 3/4	4 3/4	4 3/8	4 3/4		5 1/4	5 1/8
Dimension B	inches	8	6	7	9 1/4	6	6 7/8		10 3/4	11 3/4
Price	each	3.25	3.60	3.60	6.00	6.60	6.60	6.60	8.75	16.00
Price, galvanized	each	5.70	6.30	6.30	10.50	11.55	11.55	11.55	15.25	28.00

Size	inches	8	10	12	12x8	12x10	14x8	14x10	14x12
Dimension A	inches	6 1/2	7 3/4	9					
Dimension B	inches	13	15 1/2	18					
Price	each	21.00	43.00	60.00	65.00	85.00	85.00	85.00	185.00
Price, galvanized	each	37.00	75.00	100.00	110.00	110.00	145.00	145.00	145.00

BASIN TEES

No. 1018

Size	inches	1 1/4	1 1/2	1 1/2x1 1/4	2	2x1 1/4	2x1 1/2	2 1/2
Dimension A	inches		5 3/4	5 3/4	7	6 1/4	6 1/2	8 1/2
Dimension B	inches		2 1/4	2 1/8	3 3/4	3 3/4	3 1/4	4 1/4
Price	each	.60	.70	.77	1.10	1.20	1.20	1.75
Price, galvanized	each	1.00	1.22	1.35	1.95	2.10	2.10	3.00

The inlets of Tees and Basin Tees are tapped, pitched 1/4 inch to the foot.

The inlets on Reducing Fittings are always the smallest openings.

DIMENSIONS SUBJECT TO A SLIGHT VARIATION AND CHANGE WITHOUT NOTICE

BASIN CROSSES

No. 1019

Size	inches	1 1/2	2	2 x 1 1/2
Dimensions A	inches	5 3/4	7	6 1/4
Price	each	1.50	1.75	1.95
Price, galvanized	each	2.50	3.10	3.40

The inlets of Basin Crosses are tapped, pitched 1/4 inch to the foot.

PARTITION CROSSES

No. 1046

Size	inches	1 1/4x1 1/2
Dimension A	inches	3 1/4
Dimension B	inches	5 1/2
Price	each	1.25
Price, galvanized	each	2.20

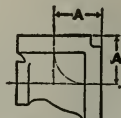
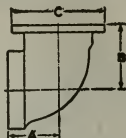
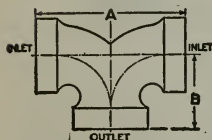
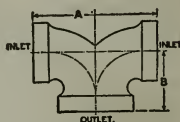
Partition Crosses have been made to supply a demand in certain localities, but may not be passed by inspectors everywhere.

The inlets on Reducing Fittings are always the smallest openings.

DIMENSIONS SUBJECT TO A SLIGHT VARIATION AND CHANGE WITHOUT NOTICE

DRAINAGE FITTINGS

CAST IRON. SCREWED FOR WROUGHT PIPE

90° Elbows
With Side Outlet
Fig. 100890° Elbows
with Heel Outlet
Fig. 1009Closet Elbow
Flanged One End
Fig. 1012Reducing Elbow
Fig. 1013Three Way Elbow
Fig. 1010Reducing Three
Way Elbows
Fig. 1011

Nos. 1008-1009—ELBOWS

Size	inches	4
Dimensions A	inches	3 1/8
Dimensions B	inches	2
Size of Heel Outlet	inches	2
Price	each	3.85
Price, Galvanized	each	6.75

Nos. 1010-1011—ELBOWS

Size	inches	1 1/4	1 1/2	2	2 1/2	3	4
Dimensions A	inches	5 1/4	6 1/4	7 3/4	8 3/4	10 3/4	13 3/4
Dimensions B	inches	2 1/2	3 1/8	3 1/2	4 1/8	5 1/8	6 1/4
Price	each	.75	.85	1.10	2.25	3.00	5.00
Price, Galvanized	each	1.25	1.50	1.95	3.90	5.25	8.75

Size	inches	4x3	5	5x4	6	6x4	6x5
Dimensions A	inches	9 1/2	12 1/4	11 3/4	14 1/4	12 3/4	13 3/4
Dimensions B	inches	4 1/2	6 1/2	5 1/2	7 1/2	5 1/2	6 1/4
Price	each	5.50	7.50	8.25	13.50	15.00	15.00
Price, Galvanized	each	9.65	13.15	14.50	23.50	26.25	26.25

The inlets of Three Way Elbows are tapped, pitched 1/4 inch to the foot.

The inlets on Reducing Fittings are always the smallest openings.

Dimensions Subject to a Slight Variation and Change Without Notice.

CLOSET ELBOWS

FLANGED ONE END

No. 1012

Size	inches	4
Dimension A	inches	3 1/8
Dimension B	inches	4 5/8
Diameter of Flange C	inches	7
Price	each	4.25
Price, Galvanized	each	7.40

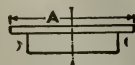
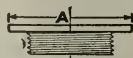
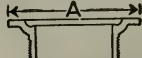
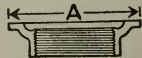
REDUCING CLOSET ELBOWS

No. 1013

Size	inches	4x5
Dimension A	inches	4 1/8
Dimension B	inches	3 1/2
Price	each	4.25
Price, Galvanized	each	7.40

Closet Elbows are tapped pitched 1/4 inch to the foot.

CLOSET FLANGES

For Flat Gasket
Fig. 1014 1/2 Mall. Iron
Fig. 1014 1/2 BrassFor Flat Gasket
Fig. 1015 BrassFor Ring Gasket
Fig. 1015 1/2 BrassFor Ring Gasket
Fig. 1016 1/2 Mall. Iron
Fig. 1016 1/2 Brass

Size	inches	4
Diameter of Flange A	inches	7
Price, Nos. 1014, 1016, Malleable Iron	each	1.35
Price, Nos. 1014, 1016, Malleable Iron, Galvanized	each	2.35
Price, Nos. 1014 1/2, 1015, 1015 1/2, 1016 1/2, Brass	each	7.00

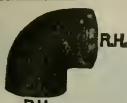


Fig. 61

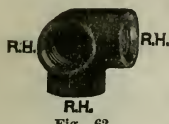


Fig. 62



Fig. 63

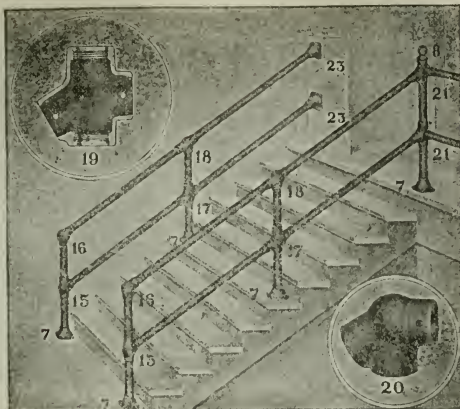


Fig. 64

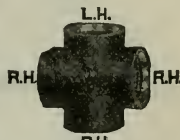


Fig. 65



Fig. 66

SLIP AND SCREW JOINT VARIABLE ANGLE MALLEABLE IRON STAIR RAIL FITTINGS

Angle Fittings, Vertical Joints Screwed, Angle Joints Drilled for Rivets

These fittings may be used on any stair rail between $27\frac{1}{2}^\circ$ and $47\frac{1}{2}^\circ$.

30° fittings—for angles between $27\frac{1}{2}^\circ$ and $32\frac{1}{2}^\circ$.

35° fittings—for angles between $32\frac{1}{2}^\circ$ and $37\frac{1}{2}^\circ$.

40° fittings—for angles between $37\frac{1}{2}^\circ$ and $42\frac{1}{2}^\circ$.

45° fittings—for angles between $42\frac{1}{2}^\circ$ and $47\frac{1}{2}^\circ$.

When ordering, specify number and angle of fitting required.

Size	inches	1	1½	2	2½
No. 15, angle tee	each	1.30	1.50	2.00	2.50
No. 16, angle elbow	each	1.10	1.25	1.70	2.25
No. 17, angle cross	each	1.50	1.75	2.35	2.75
No. 18, angle tee	each	1.30	1.50	2.00	2.50
No. 19, single angle cross	each	1.50	1.75	2.35	2.75
No. 20, single angle tee	each	1.30	1.50	2.00	2.50
No. 21, angle tee, right hand, side outlet	each	1.85	2.20	3.00	3.60
No. 22, angle tee, left hand, side outlet	each	1.85	2.20	3.00	3.60
No. 23, square post angle flange	each	1.50	1.75	1.90	2.25

These fittings take the place of special angle fittings, have a better appearance and are stronger than the adjustable, and are time and money savers.

The posts are first screwed together and the rails are then fitted and riveted.

GAS FITTING PATTERN RAILING FITTINGS

Plain Pattern, Malleable Iron

Pipe size	inches	¾	1	1¼	1½	2	2½	3
No. 61, elbow, black	per lb.	.12	.12	.12	.12	.12	.12	.12
No. 61, elbow, galvanized	per lb.	.19	.19	.19	.19	.19	.19	.19
No. 62, elbow, side outlet, black	per lb.	.20	.20	.20	.20	.20	.20	.20
No. 62, elbow, side outlet, galvanized	per lb.	.28	.28	.28	.28	.28	.28	.28
No. 63, tee, black	per lb.	.12	.12	.12	.12	.12	.12	.12
No. 63, tee, galvanized	per lb.	.19	.19	.19	.19	.19	.19	.19
No. 64, tee, side outlet, black	per lb.	.20	.20	.20	.20	.20	.20	.20
No. 64, tee, side outlet, galvanized	per lb.	.28	.28	.28	.28	.28	.28	.28
No. 65, cross, black	per lb.	.20	.20	.12	.12	.12	.12	.12
No. 65, cross, galvanized	per lb.	.28	.28	.19	.19	.19	.19	.19
No. 66, cross, side outlet, black	per lb.	.20	.20	.20	.20	.20	.20	.20
No. 66, cross, side outlet, galvanized	per lb.	.28	.28	.28	.28	.28	.28	.28

Fittings larger than 2 inch are made to order only.

Fittings will be furnished tapped, as shown in cuts, or right hand on all openings when so specified, at regular price. Tapped otherwise will be charged at 15 per cent additional, net.

Reducing sizes will be made to order at a special price, and unless otherwise specified, will be tapped same as straight fittings, as shown in above cuts.

Fittings will be reamed for slip joints, when so specified, at an additional price. Inquiries and orders should be accompanied by sketches showing clearly which openings are to be so reamed.

In ordering, specify catalogue number and size.
Black will always be furnished unless galvanized is specified.



Fig. 9



Fig. 10



Fig. 11



Fig. 12



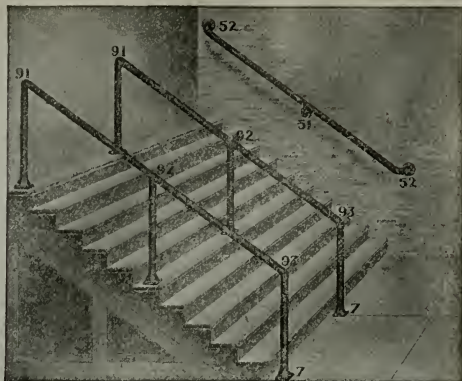
Fig. 51



Fig. 50



Fig. 55



FLUSH JOINT STAIR RAIL FITTINGS

For Schools and Public Buildings

These fittings are made with an extension or connector, over which the pipe is tightly driven up to the face of fittings, forming a smooth, flush joint.

These fittings will be furnished to order only.

Inquiries and orders should specify style number, size and angle, also whether black or galvanized, malleable iron or finished brass.

Size	.....inches	1 1/4	1 1/2	2
No. 91, stair landing elbow.....each	2.50	2.75	3.25	
No. 91, stair landing elbow, galvanized.....each	2.80	3.15	3.75	
No. 92, center rail tee.....each	2.75	3.00	3.50	
No. 92, center rail tee, galvanized.....each	3.15	3.50	4.15	
No. 93, angle elbow.....each	2.50	2.75	3.25	
No. 93, angle elbow, galvanized.....each	2.80	3.15	3.75	

Furnished in any angle between 27 1/2° and 47 1/2°.

AUXILIARY RAILING FITTINGS

Malleable Iron

Pipe size	.....inches	1	1 1/4	1 1/2	2
No. 9, recessed pipe coupling.....each	.35	.45	.55	.70	
No. 9, recessed pipe coupling, galv.....each	.45	.55	.70	.90	
No. 10, floor flange, long base.....each	.30	.60	.75	1.25	
No. 11, 45° side outlet elbow.....each	.50	.70	.90	1.50	
No. 12, 45° side outlet tee.....each	.55	.75	1.00	1.60	
No. 60, stair rail bracket.....each	.35	.35	.35	.35	
No. 51, stair rail bracket.....each	.45	.45	.45	.45	
No. 52, stair rail bracket elbow.....each	1.10	1.30	1.50	1.70	
No. 55, loafer rail (cast iron) 18 inches long.....each	.30	.30	.30	.30	
No. 56, hitching post caps, male.....each	1.00	1.00	1.00	1.00	
No. 57, hitching post caps, female.....each	1.00	1.00	1.00	1.00	
No. 58, board walk flange.....each	.35	.40	.50	.65	
No. 59, board walk bracket.....each	.35	.40	.50	.65	
No. 60, self-closing gate hinge.....per set	3.00	3.00	3.75	4.75	
No. 60, self-closing gate hinge, galv.....per set	3.75	3.75	5.00	6.50	

Add 50 per cent for galvanized where galvanized prices are not given.

In ordering these fittings, describe kind wanted by number and size.



Fig. 52



Fig. 58



Fig. 59



Fig. 60



Fig. 60A Galv.



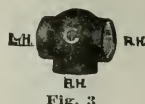
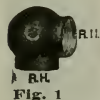
Fig. 56



Fig. 57

BALL PATTERN RAILING FITTINGS

MALLEABLE IRON FOR ALL PURPOSES



Pipe Size	Inches	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4
No. 1, Elbow	Each	.15	.18	.20	.35	.45	.72	1.60	2.25	4.50
No. 2, Elbow, Side Outlet	Each	.20	.23	.25	.40	.50	.80	1.75	2.50	5.00
No. 3, Tee	Each	.20	.23	.25	.40	.50	.75	1.75	2.50	5.00
No. 4, Tee, Side Outlet	Each	.30	.33	.35	.45	.55	.90	1.90	2.60	5.25
No. 5, Cross	Each	.30	.33	.35	.45	.58	1.00	1.80	2.60	5.25
No. 6, Cross, Side Outlet	Each	.35	.38	.40	.50	.65	1.35	2.00	2.75	5.50
No. 7, Floor Flange, Square	Each	.16	.18	.20	.40	.50	.90	1.35	2.50	5.00
No. 8, Ball Ornament	Each	.16	.18	.20	.25	.35	.90	1.35	2.00	4.25

REDUCING ELBOWS—Not illustrated

Size	Inches	1 1/4 x 1	1 1/2 x 1 1/4	2 x 1 1/4	2 x 1 1/2	2 1/2 x 2	3 x 2 1/2
Price	Each	.40	.52	.82	.82	1.85	2.60

REDUCING SIDE OUTLET ELBOWS—Not illustrated

Size	Inches	1 1/4 x 1 x 1	1 1/2 x 1 1/4 x 1 1/4	2 x 1 1/4 x 1 1/4
Price	Each	.46	.58	.92
Size	Inches	2 x 1 1/2 x 1 1/2	2 1/2 x 2 x 2	3 x 2 1/2 x 2 1/2
Price	Each	.92	2.00	2.90

REDUCING TEES—Not illustrated

Size	Inches	1 x 1 x 1 1/4	1 1/4 x 1 1/4 x 1	1 1/4 x 1 1/4 x 1 1/2
Price	Each	.46	.46	.58
Size	Inches	1 1/2 x 1 1/2 x 1 1/4	1 1/4 x 1 1/4 x 2	1 1/2 x 1 1/2 x 2
Price	Each	.58	.85	.85
Size	Inches	2 x 2 x 1 1/4	2 x 2 x 1 1/2	2 x 2 x 2 1/2
Price	Each	.85	.85	2.00
Size	Inches	2 1/2 x 2 1/2 x 2	2 1/2 x 2 1/2 x 3	3 x 3 x 2 1/2
Price	Each	2.00	2.90	2.90

REDUCING SIDE OUTLET TEES—Not illustrated

Size	Inches	1 1/4 x 1 1/4 x 1 x 1	1 1/2 x 1 1/2 x 1 1/4 x 1 1/4	2 x 2 x 1 1/4 x 1 1/4
Price	Each	.52	.63	1.05
Size	Inches	2 x 2 x 1 1/2 x 1 1/2	2 1/2 x 2 1/2 x 2 x 2	3 x 3 x 2 1/2 x 2 1/2
Price	Each	1.05	2.20	3.00

REDUCING CROSSES—Not illustrated

Size	Inches	1 1/4 x 1 1/4 x 1 x 1	1 1/2 x 1 1/2 x 1 1/4 x 1 1/4	2 x 2 x 1 1/4 x 1 1/4
Price	Each	.52	.67	1.15
Size	Inches	2 x 2 x 1 1/2 x 1 1/2	2 1/2 x 2 1/2 x 2 x 2	3 x 3 x 2 1/2 x 2 1/2
Price	Each	1.15	2.10	3.00

REDUCING SIDE OUTLET CROSSES—Not illustrated

Size	Inches	2 x 2 x 1 1/2 x 1 1/2 x 1 1/2
Price	Each	1.55

ADD 50 PER CENT TO ABOVE PRICES FOR GALVANIZED RAILING FITTINGS.
Reducing Fittings will always be tapped same as straight sizes, unless otherwise ordered.



Fig. 600.
With Lever Valve

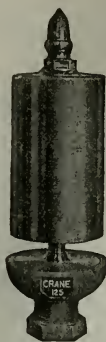


Fig. 602.
Without Valve

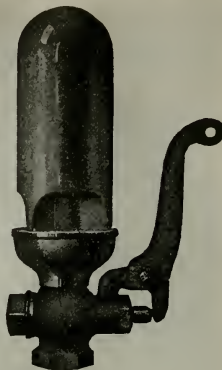


Fig. 607.
With Lever Valve



Fig. 607 1/2.
Without Valve

BRASS STEAM WHISTLES

For Steam Working Pressures up to 125 Pounds

Always order whistles by the diameter of bell and not by the size of pipe.

No. 600

Diameter of bell.....inches	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Length of bell.....inches	2 1/2	3	3 1/4	4	4 1/2	5	5 3/4	6 1/2	8	9 1/2	14	16	22
Size of pipe.....inches	1/4	3/8	3/8	3/8	3/8	1	1	1 1/4	1 1/2	2	2 1/2	3	3
Price .....each	3.10	3.75	4.00	5.50	6.50	8.50	11.50	15.00	22.50	33.00	95.00	225.00	425.00

No. 602

Diameter of bell.....inches	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12
Length of bell.....inches	2 1/2	3	3 1/4	4	4 1/2	5	5 3/4	6 1/2	8	9 1/2	14	16	22
Size of pipe.....inches	1/4	3/8	3/8	1/2	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3
Price .....each	2.20	2.75	3.00	4.35	5.25	7.25	9.50	12.00	19.00	24.00	70.00	175.00	350.00

Brass whistles with longer bell than standard furnished to order.

Fig. 607. SINGLE BELL CHIME WHISTLES

FOR STEAM OR COMPRESSED AIR

Suitable for Working Pressures From 25 to 150 Pounds

Diameter of Bell inches	Size of Pipe inches	No. 607 With Lever Valve each	No. 607 1/2 Without Valve each
1 1/2	3/8	6.00	4.50
2	1/2	7.00	5.00
2 1/2	3/4	9.00	7.00
3	3/4	11.00	8.00
3 1/2	1	15.00	11.00
4	1 1/4	18.00	14.00
5	1 1/2	28.00	22.00
6	1 1/2	42.00	35.00
8	2	100.00	85.00

Chime Whistles can only be furnished with pipe connection as listed above.

Fig. 604. MOCKING BIRD STEAM WHISTLES

For Steam Working Pressures up to 125 Pounds

This improved piston whistle is particularly adapted for river boats, fog signals, fire alarms, etc., making a different sound from the ordinary steam whistle, being so constructed that the sound can be changed instantly, whereby boats, etc., using them can be easily distinguished at a long distance.

Diameter of bell .....inches	3	4	5	6
Length of bell.....inches	9	12	15	18
Size of pipe.....inches	1	1 1/4	1 1/2	2
Price .....each	40.00	53.00	70.00	95.00

Fig. 608. BRASS WHISTLE VALVES

For Steam Working Pressures up to 125 Pounds

Size, inches..	3/4	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Price, each	2.00	2.50	3.00	3.50	5.00	6.00	9.00	18.00	27.00

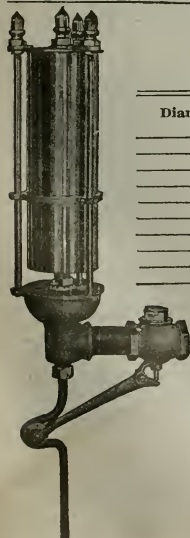


Fig. 604
Mocking Bird



Fig. 608
Valve

MACHINE BOLTS



With Square Heads and Square Nuts, Finished Points

Adopted July 16th, 1912.

To take Effect August 1st, 1912

PRICE PER HUNDRED

Length Inches	1/4	5/16	3/8	7/16	1/2	9/16 & 5/8	3/4	7/8	1	1 1/4	1 1/2
1	\$1.70	\$2.00	\$2.40	\$2.80	\$3.60	\$5.20	\$7.70	\$10.50	\$15.10	\$22.50	\$30.00
1 1/2	1.70	2.00	2.40	2.80	3.60	5.20	7.70	10.50	15.10	22.50	30.00
2	1.78	2.12	2.56	3.00	3.86	5.58	8.25	11.20	16.00	23.70	31.50
2 1/2	1.86	2.24	2.72	3.20	4.12	5.96	8.80	11.90	16.90	24.90	33.00
3	1.94	2.36	2.88	3.40	4.38	6.34	9.35	12.60	17.80	26.10	34.50
3 1/2	2.02	2.48	3.04	3.60	4.64	6.72	9.90	13.30	18.70	27.30	36.00
4	2.10	2.60	3.20	3.80	4.90	7.10	10.45	14.00	19.60	28.50	37.50
4 1/2	2.18	2.72	3.36	4.00	5.16	7.48	11.00	14.70	20.50	29.70	39.00
5	2.26	2.84	3.52	4.20	5.42	7.86	11.55	15.40	21.40	30.90	40.50
5 1/2	2.34	2.96	3.68	4.40	5.68	8.24	12.10	16.10	22.30	32.10	42.00
6	2.42	3.08	3.84	4.60	5.94	8.62	12.65	16.80	23.20	33.30	43.50
6 1/2	2.50	3.20	4.00	4.80	6.20	9.00	13.20	17.50	24.10	34.50	45.00
7	2.58	3.32	4.16	5.00	6.46	9.38	13.75	18.20	25.00	35.70	46.50
7 1/2	2.66	3.44	4.32	5.20	6.72	9.76	14.30	18.90	25.90	36.90	48.00
8	2.74	3.56	4.48	5.40	6.98	10.14	14.85	19.60	26.80	38.10	49.50
9	2.90	3.80	4.80	5.80	7.50	10.90	15.95	21.00	28.60	40.50	52.50
10	3.06	4.04	5.12	6.20	8.02	11.66	17.05	22.40	30.40	42.90	55.50
11	3.22	4.28	5.44	6.60	8.54	12.42	18.15	23.80	32.20	45.30	58.50
12	3.38	4.52	5.76	7.00	9.06	13.18	19.25	25.20	34.00	47.70	61.50
13	....	....	6.08	7.40	9.58	13.94	20.35	26.60	35.80	50.10	64.50
14	....	....	6.40	7.80	10.10	14.70	21.45	28.00	37.60	52.50	67.50
15	....	....	6.72	8.20	10.62	15.46	22.55	29.40	39.40	54.90	70.50
16	....	....	7.04	8.60	11.14	16.22	23.65	30.80	41.20	57.30	73.50
17	....	....	....	....	11.66	16.98	24.75	32.20	43.00	59.70	76.50
18	....	....	....	....	12.18	17.74	25.85	33.60	44.80	62.10	79.50
19	....	....	....	....	12.70	18.50	26.95	35.00	46.60	64.50	82.50
20	....	....	....	....	13.22	19.26	28.05	36.40	48.40	66.90	85.50
21	....	....	....	....	....	....	29.15	37.80	50.20	69.30	88.50
22	....	....	....	....	....	....	30.25	39.20	52.00	71.70	91.50
23	....	....	....	....	....	....	31.35	40.60	53.80	74.10	94.50
24	....	....	....	....	....	....	32.45	42.00	55.60	76.50	97.50
25	....	....	....	....	....	....	33.55	43.40	57.40	78.90	100.50
26	....	....	....	....	....	....	34.65	44.80	59.20	81.30	103.50
27	....	....	....	....	....	....	35.75	46.20	61.00	83.70	106.50
28	....	....	....	....	....	....	36.85	47.60	62.80	86.10	109.50
29	....	....	....	....	....	....	37.95	49.00	64.60	88.50	112.50
30	....	....	....	....	....	....	39.05	50.40	66.40	90.90	115.50
Adv. per in.	.10	.24	.32	.40	.52	.76	1.10	1.40	1.80	2.40	3.00

These list prices apply only on lots of not less than 100 of a size.

Unless otherwise specified we will furnish Machine Bolts with square heads and hot pressed square nuts. Length of Machine Bolts is measured under head to point.

Bolts with hexagon heads, or hexagon nuts, 10 per cent extra.

If both hexagon heads and hexagon nuts, 20 per cent extra.

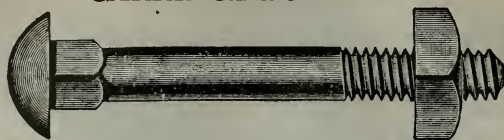
Bolts with square nuts, U. S. S., 5 per cent extra.

Bolts with hexagon nuts, U. S. S., 15 per cent extra.

WE CAN FURNISH ANY STYLE OF BOLTS OR RODS TO ORDER

GEO. B. CARPENTER & CO.

CARRIAGE BOLT LIST



With Full Size Square Under Heads, Forged Nuts and Finished Points

Effective November 1st, 1912

PRICE PER HUNDRED

Length Inches	$\frac{1}{4}$	5/16	$\frac{3}{8}$	7/16	$\frac{1}{2}$	9/16 and $\frac{5}{8}$	$\frac{3}{4}$
1½	\$1.00	\$1.40	\$1.90	\$2.20	....	....	....
2	1.10	1.52	2.06	2.40	....	....	....
2½	1.20	1.64	2.22	2.60	\$3.25	\$5.75	\$ 8.50
3	1.30	1.76	2.38	2.80	3.53	6.13	9.00
3½	1.40	1.88	2.54	3.00	3.81	6.51	9.50
4	1.50	2.00	2.70	3.20	4.09	6.89	10.00
4½	1.60	2.12	2.86	3.40	4.37	7.27	10.50
5	1.70	2.24	3.02	3.60	4.65	7.65	11.00
5½	1.80	2.36	3.18	3.80	4.93	8.03	11.50
6	1.90	2.48	3.34	4.00	5.21	8.41	12.00
6½	2.00	2.60	3.50	4.20	5.49	8.79	12.50
7	2.10	2.72	3.66	4.40	5.77	9.17	13.00
7½	2.20	2.84	3.82	4.60	6.05	9.55	13.50
8	2.30	2.96	3.98	4.80	6.33	9.93	14.00
8½	2.40	3.08	4.14	5.00	6.61	10.31	14.50
9	2.50	3.20	4.30	5.20	6.89	10.69	15.00
9½	2.60	3.32	4.46	5.40	7.17	11.07	15.50
10	2.70	3.44	4.62	5.60	7.45	11.45	16.00
11	2.90	3.68	4.94	6.00	8.01	12.21	17.00
12	3.10	3.92	5.26	6.40	8.57	12.97	18.00
13	3.30	4.16	5.58	6.80	9.13	13.73	19.00
14	3.50	4.40	5.90	7.20	9.69	14.49	20.00
15	3.70	4.64	6.22	7.60	10.25	15.25	21.00
16	3.90	4.88	6.54	8.00	10.81	16.01	22.00
17	4.10	5.12	6.86	8.40	11.37	16.77	23.00
18	4.30	5.36	7.18	8.80	11.93	17.53	24.00
19	4.50	5.60	7.50	9.20	12.49	18.29	25.00
20	4.70	5.84	7.82	9.60	13.05	19.05	26.00

Intermediate lengths take list for next longer length.

When fitted with Hexagon Nuts, add 15%.

Extras for extra length of threads and extra nuts, same as on Machine Bolts.

FOR NUTS, WASHERS AND NUT LOCKS, SEE INDEX

COACH AND LAG SCREWS



GIMLET POINT COACH SCREW

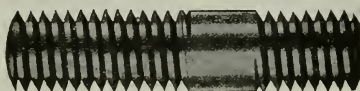
November 1908

Price Per 100

Length inches	Diam. inches	%	$\frac{1}{8}$	$\frac{1}{2}$	$\frac{3}{4}$ and $\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	1
1 $\frac{1}{2}$	\$2.25	\$2.70	\$3.15	\$3.75	....	....	....	....
2	2.45	2.96	3.47	4.11	\$6.00	....	....	....
2 $\frac{1}{2}$	2.65	3.22	3.79	4.47	6.50	\$9.20	....	....
3	2.85	3.48	4.11	4.83	7.00	9.90	\$15.00	....
3 $\frac{1}{2}$	3.05	3.74	4.43	5.19	7.50	10.60	16.00	\$22.00
4	3.25	4.00	4.75	5.55	8.00	11.30	17.00	23.30
4 $\frac{1}{2}$	3.45	4.26	5.07	5.91	8.50	12.00	18.00	24.60
5	3.65	4.52	5.39	6.27	9.00	12.70	19.00	25.90
5 $\frac{1}{2}$	3.85	4.78	5.71	6.63	9.50	13.40	20.00	27.20
6	4.05	5.04	6.03	6.99	10.00	14.10	21.00	28.50
6 $\frac{1}{2}$	....	....	6.35	7.35	10.50	14.80	22.00	29.80
7	....	....	6.67	7.71	11.00	15.50	23.00	31.10
7 $\frac{1}{2}$	....	....	6.99	8.07	11.50	16.20	24.00	32.40
8	....	....	7.31	8.43	12.00	16.90	25.00	33.70
9	....	....	7.95	9.15	13.00	17.30	27.00	36.30
10	....	....	....	9.87	14.00	19.70	29.00	38.90
11	....	....	....	10.59	15.00	21.10	31.00	41.50
12	....	....	....	11.31	16.00	22.50	33.00	44.10

The following extras are to be understood as a part of the Coach and Lag Screw List:
Hexagon and Tee Heads, 10 per cent extra.

STUDS OR STUD BOLTS



MILLED IRON STUDS

Price Per 100

	Diam.	% inch	$\frac{1}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	1	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Length of Studs	1 $\frac{1}{4}$	\$3.35	\$4.05	\$4.40	\$5.10	....	....	....	....	....	....
	1 $\frac{1}{2}$	3.50	4.20	4.60	5.30	\$6.10	....	....	....	....	....
	1 $\frac{3}{4}$	3.65	4.35	4.80	5.50	6.30	....	....	....	....	....
	2	3.80	4.50	5.00	5.70	6.50	\$8.80	....	....	....	....
	2 $\frac{1}{4}$	3.95	4.65	5.20	5.90	6.70	9.10	....	....	....	....
	2 $\frac{1}{2}$	4.10	4.80	5.40	6.10	6.90	9.40	\$12.00	....	....	....
	2 $\frac{3}{4}$	4.25	4.95	5.60	6.30	7.10	9.70	12.50	....	....	....
	3	4.40	5.10	5.80	6.50	7.30	10.00	13.00	\$17.00	\$21.00	....
	3 $\frac{1}{4}$	....	5.25	6.00	6.70	7.50	10.30	13.50	17.75	22.00	....
	3 $\frac{1}{2}$	....	5.40	6.20	6.90	7.70	10.60	14.00	18.50	23.00	\$27.00
	3 $\frac{3}{4}$	....	5.55	6.40	7.10	7.90	10.90	14.50	19.25	24.00	28.00
	4	....	....	6.60	7.30	8.10	11.20	15.00	20.00	25.00	29.00
Thds to inch	16	14	12	12	11	10	9	8	7	7	7
Add for ea. $\frac{1}{4}$ in.	\$0.15	\$0.20	\$0.20	\$0.20	\$0.25	\$0.30	\$0.40	\$0.60	\$0.75	\$1.00	

The tap end of Stud Bolt fits more tightly than nut end. Give length of parts when ordering.

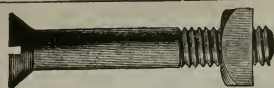


Fig. 604A. Flat Head

STOVE BOLTS



Fig. 604B. Round Head

Revised List of Flat and Round Head Stove Bolts. Adopted March 1, 1907

Length inches	Diam. $\frac{1}{8}$ & $\frac{1}{2}$ inch	Diam. $\frac{3}{8}$ inch	Diam. $\frac{7}{8}$ & $\frac{1}{4}$ inch	Diam. $\frac{1}{2}$ inch	Diam. $\frac{3}{4}$ inch	Length inches	Diam. $\frac{1}{8}$ & $\frac{1}{2}$ inch	Diam. $\frac{1}{2}$ inch	Diam. $\frac{7}{8}$ & $\frac{1}{4}$ inch	Diam. $\frac{1}{2}$ inch	Diam. $\frac{3}{4}$ inch	
$\frac{3}{8}$	\$0.85	\$0.85		....	....	3	\$1.20	\$1.50	\$2.00	\$2.70	\$4.20	
$\frac{1}{2}$	.85	.85	\$1.20	....	....	$3\frac{1}{4}$	1.20	1.60	2.10	2.85	4.40	
$\frac{5}{8}$	.85	.85	1.20			$3\frac{1}{2}$	1.20	1.70	2.20	3.00	4.60	
$\frac{3}{4}$	.85	.85	1.20	\$1.75	\$2.65	$3\frac{3}{4}$	1.20	1.80	2.30	3.15	4.80	
$\frac{7}{8}$	.90	.90	1.25	1.80	2.70	4	1.20	1.90	2.40	3.30	5.00	
1	.90	.90	1.30	1.85	2.75	$4\frac{1}{4}$	1.20	2.00	2.50	3.45	5.20	
$1\frac{1}{8}$	.95	.95	1.35	1.90	2.85	$4\frac{1}{2}$	1.20	2.10	2.60	3.60	5.40	
$1\frac{1}{4}$	1.00	1.00	1.40	1.95	2.90	$4\frac{3}{4}$	1.20	2.20	2.70	3.75	5.60	
$1\frac{3}{8}$	1.05	1.05	1.45	2.00	3.00	5	1.20	2.30	2.85	3.90	5.80	
$1\frac{1}{2}$	1.10	1.10	1.50	2.05	3.10	$5\frac{1}{4}$	1.20	2.40	3.00	4.10	6.00	
$1\frac{3}{4}$	1.15	1.15	1.55	2.15	3.20	$5\frac{1}{2}$	1.20	2.50	3.15	4.30	6.20	
2	1.20	1.20	1.60	2.30	3.40	$5\frac{3}{4}$	1.20	2.60	3.30	4.50	6.40	
$2\frac{1}{4}$	1.20	1.25	1.70	2.40	3.60	6	1.20	2.75	3.45	4.70	6.60	
$2\frac{1}{2}$	1.20	1.30	1.80	2.50	3.80	$6\frac{1}{4}$	1.20	2.90	3.60	4.90	6.80	
$2\frac{3}{4}$	1.20	1.40	1.90	2.60	4.00	$6\frac{1}{2}$	1.20	3.05	3.75	5.10	7.00	

BOILER PATCH BOLTS

Per 100. All 12 Threads

Length, inches	$\frac{3}{8}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$
$\frac{1}{2}$ inch diameter	\$3.75	\$4.00	\$4.25	\$4.50	\$4.75	\$5.25
$\frac{5}{8}$ inch diameter	4.25	4.50	4.80	5.10	5.50	6.50
$\frac{3}{4}$ inch diameter	....	6.00	6.50	6.80	7.25	8.25
$\frac{7}{8}$ inch diameter	....	....	9.50	9.85	10.25	11.25
1 inch diameter	....	....	13.50	14.00	14.75	16.25

Blank, Not Threaded

Diameter, inches	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Per pound	\$0.25	\$0.20	\$0.19	\$0.18	\$0.17

The length of bolts and blanks is taken from the largest diameter of bevel to point.

In ordering patch bolts, please specify the diameter first, then the length, thus: $\frac{3}{4}$ x $\frac{7}{8}$.

ELEVATOR BOLTS

(Illustrated on page 489)

Per Hundred. List April 1, 1913

Length, inches	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
$\frac{3}{16}$ - $\frac{1}{4}$ inch diameter	\$2.20	\$2.30	\$2.30	\$2.40	\$2.50	\$2.60	\$2.70
$\frac{1}{8}$ inch diameter	3.00	3.00	3.00	3.20	3.40	3.60	3.80
$\frac{3}{8}$ inch diameter	4.00	4.00	4.00	4.30	4.60	4.90	5.20

FOR ELEVATOR BUCKETS AND LEATHER WASHERS, SEE INDEX

PLANER HEAD BOLTS

Price per 100. Without Nuts

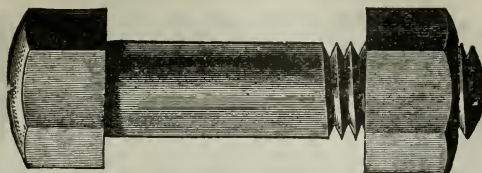
Diameter of Head		$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$
Length of Head		$\frac{1}{8}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{2}$
Diameter of Screw		$\frac{1}{2}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Length under Head to Extreme Point	1	\$12.50	.....	.....	.....	.....
	$1\frac{1}{4}$	13.25	\$15.00	\$16.75	\$16.75	21.25
	$1\frac{1}{2}$	13.25	15.25	17.50	17.50	22.00
	$1\frac{3}{4}$	....	15.50	18.50	18.50	22.50
	2	....	17.25	19.75	19.75	23.75
Finished Case Hardened Hexagon Nuts for above		\$10.00	\$12.00	\$15.00	\$16.00	\$18.00

All 12 threads to the inch.



Fig. 604D

COUPLING BOLTS



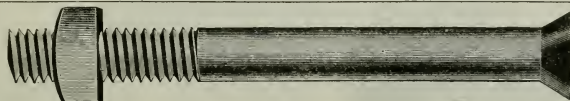
- 1—Coupling Bolts of ordinary sizes carried in stock only.
 2—Coupling Bolts have milled bodies and the heads and nuts are faced true with the body.
 3—When so ordered, the heads and nuts will be finished, at an additional price.
 4—All orders filled with U. S. Standard thread unless otherwise specified.

Always specify diameter of bolt when ordering.

COUPLING BOLTS

Price Per 100

Diameter of Head	$\frac{1}{2}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
Diameter of Bolt	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
2	\$20.00	\$25.00					
$2\frac{1}{4}$	20.50	25.75	\$32.00				
$2\frac{1}{2}$	21.00	26.50	32.00	\$38.75			
$2\frac{3}{4}$	21.50	27.25	33.00	39.75	\$56.00		
3	22.00	28.00	34.00	40.75	56.00	\$70.00	
$3\frac{1}{4}$	22.50	28.75	35.00	41.75	57.00	71.50	\$100.00
$3\frac{1}{2}$	23.00	29.50	36.00	42.75	58.00	73.00	100.00
$3\frac{3}{4}$	23.50	30.25	37.00	43.75	59.00	74.50	102.50
4	24.00	31.00	38.00	44.75	60.00	76.00	105.00
$4\frac{1}{4}$	24.50	31.75	39.00	45.75	61.00	77.50	107.50
$4\frac{1}{2}$	25.00	32.50	40.00	46.75	62.00	79.00	110.00
$4\frac{3}{4}$	25.50	33.25	41.00	47.75	63.00	80.50	112.50
5	26.00	34.00	42.00	48.75	64.00	82.00	115.00
$5\frac{1}{4}$	26.50	34.75	43.00	49.75	65.00	83.50	117.50
$5\frac{1}{2}$	27.00	35.50	44.00	50.75	66.00	85.00	120.00
$5\frac{3}{4}$	27.50	36.25	45.00	51.75	67.00	86.50	122.50
6	28.00	37.00	46.00	52.75	68.00	88.00	125.00
Thickness of Nut	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Short Diameter of Nut	$\frac{5}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2



UNION TIRE BOLTS

With Forged Nuts

Revised List of December 28, 1899

Price Per 100

Length inches	Diam. 3/16 inch	Diam. 1/4 inch	Diam. 5/16 inch	Diam. 3/8 inch	Length inches	Diam. 3/16 inch	Diam. 1/4 inch	Diam. 5/16 inch	Diam. 3/8 inch
1	\$0.60	\$0.95	\$1.40	\$2.20	3 3/4	\$1.05	\$1.40	\$1.96	\$2.90
1 1/4	.60	.95	1.40	2.20	4	1.10	1.45	2.03	3.00
1 1/2	.60	.95	1.40	2.20	4 1/4	....	1.50	2.10	3.10
1 3/4	.65	1.00	1.40	2.20	4 1/2	....	1.55	2.17	3.20
2	.70	1.05	1.47	2.20	4 3/4	....	1.60	2.24	3.30
2 1/4	.75	1.10	1.54	2.30	5	....	1.65	2.31	3.40
2 1/2	.80	1.15	1.61	2.40	5 1/4	....	....	2.38	3.50
2 3/4	.85	1.20	1.68	2.50	5 1/2	....	....	2.45	3.60
3	.90	1.25	1.75	2.60	5 3/4	....	....	2.52	3.70
3 1/4	.95	1.30	1.82	2.70	6	....	....	2.59	3.80
3 1/2	1.00	1.35	1.89	2.80	....	....	....	....	....

FOR RODS, STEEL AND IRON, SEE INDEX

WROUGHT AND PLATE WASHERS—TRACK BOLTS

FOR OTHER STYLES OF WASHERS, SEE INDEX

Fig 23. WROUGHT WASHERS

Revised January 20, 1910; Taking Effect
January 21, 1910

Fig. 23

In ordering always specify size of bolt



Fig. 24

Diameter	Size of Bolt	Thickness Wire Gauge	Size of Hole	Price per 100 lbs.	Average Number in 100 lbs.
$\frac{3}{8}$	$\frac{1}{8}$	18	$\frac{1}{4}$	\$14.00	44075
$\frac{7}{8}$	$\frac{1}{4}$	16	$\frac{1}{8}$	12.20	13845
$\frac{1}{2}$	$\frac{3}{8}$	16	$\frac{1}{8}$	11.40	11220
$\frac{1}{4}$	$\frac{1}{2}$	14	$\frac{1}{8}$	10.50	6573
$\frac{1}{8}$	$\frac{3}{4}$	14	$\frac{1}{2}$	9.80	4261
$\frac{1}{16}$	$\frac{1}{2}$	12	$\frac{1}{8}$	9.40	2683
$\frac{1}{32}$	$\frac{1}{4}$	12	$\frac{1}{8}$	9.30	2249
$\frac{1}{64}$	$\frac{1}{8}$	10	$\frac{1}{8}$	9.20	1315
$\frac{1}{128}$	$\frac{1}{16}$	10	$\frac{1}{8}$	9.10	1013
$\frac{1}{256}$	$\frac{1}{32}$	9	$\frac{1}{8}$	9.00	858
$\frac{1}{512}$	$\frac{1}{64}$	9	$\frac{1}{8}$	9.00	617
$\frac{1}{1024}$	$\frac{1}{128}$	9	$\frac{1}{8}$	9.00	516
$\frac{1}{2048}$	$\frac{1}{256}$	8	$\frac{1}{8}$	9.20	403
$\frac{1}{4096}$	$\frac{1}{512}$	8	$\frac{1}{8}$	9.20	320
$\frac{1}{8192}$	$\frac{1}{1024}$	8	$\frac{1}{8}$	9.20	272
$\frac{1}{16384}$	$\frac{1}{2048}$	8	$\frac{1}{8}$	9.50	247
$\frac{1}{32768}$	$\frac{1}{4096}$	8	$\frac{1}{8}$	9.50	224
$\frac{1}{65536}$	$\frac{1}{8192}$	8	2	9.50	200
$\frac{1}{131072}$	2	8	$2\frac{1}{8}$	9.50	180

Fig. 24. SQUARE PLATE WASHERS

Prices of Square Washers depend very much upon quantity wanted, as they are made up specially to order. Lowest figures will be quoted on application.

Wide	Thick	Hole	Bolt	Number in 100 lbs.
$1\frac{1}{2}$	$\frac{1}{8}$	$\frac{7}{8}$	$\frac{3}{8}$	1300
$1\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	1100
$1\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	500
$2\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{5}{8}$	315
$2\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	250
3	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	165
$3\frac{1}{2}$	$\frac{3}{8}$	$1\frac{1}{8}$	1	87
4	$\frac{3}{8}$	$1\frac{1}{4}$	$1\frac{1}{8}$	65
$4\frac{1}{2}$	$\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{1}{4}$	48
5	$\frac{3}{8}$	$1\frac{3}{4}$	$1\frac{3}{8}$	40
6	$\frac{3}{8}$	$1\frac{7}{8}$	$1\frac{1}{2}$	28

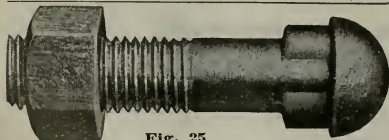


Fig. 25

TRACK BOLTS

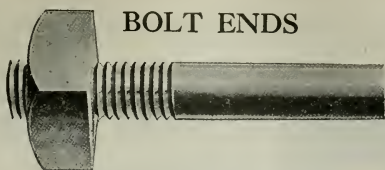
200 lbs. in a Keg.

For rail, lbs.	8 and 10	12 and 16	20	24	30
Size used	$1\frac{1}{4} \times \frac{3}{4}$	$1\frac{1}{2} \times \frac{3}{4}$	$2 \times \frac{1}{2}$	$2\frac{1}{2} \times \frac{1}{2}$	$2\frac{3}{4} \times \frac{5}{8}$

STANDARD LIST OF EXTRAS APPLYING TO TRACK BOLTS

Base $\frac{3}{4}$ and Larger Diameter by $3\frac{1}{2}$ inch and Longer with Square Nuts.
Advance per 100 lbs. over Base

Diameter	$\frac{3}{4}$ inch		$\frac{1}{2}$ inch		$\frac{1}{2}$ and $9/16$ inch		$7/16$ inch		$\frac{3}{4}$ inch	
	Square Nut	Hexagon Nut	Square Nut	Hexagon Nut	Square Nut	Hexagon Nut	Square Nut	Hexagon Nut	Square Nut	Hexagon Nut
$3\frac{1}{2}$	Base	\$0.15			....	....	....	....	....	....
$3\frac{3}{4}$	\$0.05	.25	\$0.30	\$0.55	....	....	....	....	....	....
3	.15	.35	.40	.65	\$0.75	\$1.10	....	....	....	....
$2\frac{3}{4}$	.25	.45	.50	.75	.90	1.25	....	....	....	....
$2\frac{1}{2}$	.35	.55	.60	.85	1.05	1.40	\$1.55	\$2.00	....	....
$2\frac{1}{4}$	.45	.65	.70	.95	1.20	1.55	1.75	2.20	\$2.40	\$2.95
2	.55	.75	.80	1.05	1.35	1.70	1.95	2.40	2.65	3.20
$1\frac{3}{4}$	....	....	.90	1.15	1.50	1.85	2.15	2.60	2.90	3.45
$1\frac{1}{2}$	....	....	1.00	1.25	1.65	2.00	2.35	2.80	3.15	3.70



BOLT ENDS

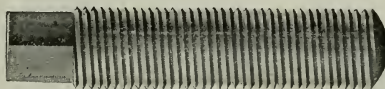
Fitted with Square Nuts

In Effect February, 1895

Size of Iron inches	Length inches	Price per lb. Cents	Weight per 100
$\frac{3}{16}$	6	32	.....
$\frac{1}{4}$	6	25	7.8
$\frac{5}{16}$	6	20	13.3
$\frac{3}{8}$	7	18	21.9
$\frac{7}{16}$	7	16	31.3
$\frac{1}{2}$	8	14	49.
$\frac{5}{8}$	8	14	63.
$\frac{3}{4}$	9	12	86.
$\frac{7}{8}$	10	10	141.
1	11	10	206.
$1\frac{1}{8}$	12	10	300.
$1\frac{1}{4}$	13	10	475.
$1\frac{3}{8}$	14	11	637.
$1\frac{1}{2}$	15	11	812.
$1\frac{5}{8}$	16	11	1038.
$1\frac{3}{4}$	17	12	1325.
$1\frac{7}{8}$	18	12	1638.
2	19	12	2010.
$2\frac{1}{4}$	20	12	2450.
$2\frac{1}{2}$	22	14	3029.
$2\frac{3}{4}$	24	14	4071.
3	24	16	4860.
	26	18	6354.

Bolt Ends ordered shorter than above standard lengths, in lots of 100 and over will be charged at the price per hundred of machine bolts of same length, subject to same discount; in smaller lot extra. Only the larger sizes enumerated are kept in stock. With Hexagon nuts, 10 per cent extra.

BOILER STAY BOLTS

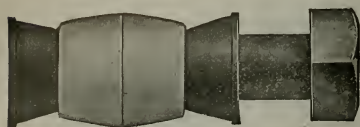


12 Threads per Inch. Price per Hundred

Length Under Head	$\frac{3}{4}$	$1\frac{3}{16}$ and $\frac{3}{4}$	$1\frac{5}{16}$ and 1
$2\frac{1}{2}$	\$14.20	\$20.80	\$30.10
3	14.95	21.80	31.40
$3\frac{1}{2}$	15.70	22.80	32.70
4	16.45	23.80	34.00
$4\frac{1}{2}$	17.20	24.80	35.30
5	17.95	25.80	36.60
$5\frac{1}{2}$	18.70	26.80	37.90
6	19.45	27.80	39.20
$6\frac{1}{2}$	20.20	28.80	40.50
7	20.95	29.80	41.80
$7\frac{1}{2}$	21.70	30.80	43.10
8	22.50	31.80	44.40
9	24.00	33.80	47.00
10	25.50	35.80	49.60
11	27.00	37.80	52.20
12	28.50	39.80	54.80

Special prices quoted on lengths over 12 inches.

CINCH ANCHORING SPECIALTIES



Cinch Expansion Bolt

The Cinch Anchoring Specialties are three in number—Cinch Expansion Bolts, Cinch Anchors and Cinch Stud Anchors. They differ from each other only in the kind of bolt that is used, the position in which the bolt is installed or the order in which the parts of the Cinch anchorage are used.

Each of the Cinch Specialties develops an anchorage that will reach and overreach the tensile strength of any steel or wrought iron bolt.

To secure this bull dog grip, a hole of less depth is needed than any other expansion device on the market requires.

The hold is secured by the expansion of the lead members so that all the irregularities in the drilled hole are filled and a solid grip is secured on the whole inside surface of the hole. In this way the Cinch Specialties afford all the advantages of a poured lead anchorage combined with the ease and convenience of installation of an expansion bolt.

The Cinch Anchorage may be set in the masonry before the work is placed in position, with the head of the bolt either in the hole or out of the hole.

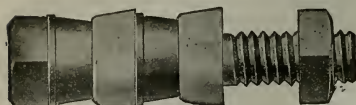
As the load is distributed uniformly on the surface of the hole, Cinch Anchorages will not crush or destroy the face of the masonry.

Cinch Anchorages will not work loose from vibration and can be installed at any desired distance from the face of the masonry.

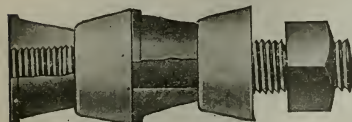
When the Cinch Expansion Bolt is used, expansion is secured by turning the bolt. In the case of Cinch Anchors and Cinch Stud Anchors expansion is obtained by caulking.

Properly installed a Cinch Anchorage cannot be pulled out.

Ask us to send you our Catalogue of
Cinch Specialties



Cinch Anchor



Cinch Stud Anchor



Two-Unit Cinch Expansion Bolt (Installed)

Note that head of bolt is out of hole.
Bolt can be taken out any time.



Two-Unit Cinch Anchor (Installed)

Note that head of bolt is in hole.
Bolt cannot be removed.



Two-Unit Cinch Stud Anchor (Installed)

Note that bolt can be removed.

CINCH ANCHORING SPECIALTIES

Price per Hundred Two-Unit Anchorages

Consisting of 4 pieces—2 Irons and 2 Lead Alloys. Without Bolts. Units either plain or threaded.



Two-Unit Anchorage, Plain

Use two units for anchorage of ordinary strength

Diameter of Bolt Sizes	Price per 100 Sets, 2 Irons, 2 Leads	Minimum Depth of Holes for 2 Units	Diameter of Hole and Drill Required
$\frac{3}{16}$	\$7.00	$\frac{7}{8}$	$\frac{1}{2}$
$\frac{1}{4}$	8.00	$1\frac{1}{8}$	$\frac{5}{8}$
$\frac{5}{16}$	9.00	$1\frac{1}{4}$	$\frac{5}{8}$
$\frac{3}{8}$	11.00	$1\frac{1}{2}$	$\frac{13}{16}$
$\frac{7}{16}$	15.00	$1\frac{1}{2}$	$\frac{13}{16}$
$\frac{1}{2}$	18.00	$1\frac{3}{4}$	1
$\frac{5}{8}$	24.00	$1\frac{7}{8}$	$1\frac{1}{8}$
$\frac{3}{4}$	35.00	$2\frac{1}{2}$	$1\frac{3}{8}$
$\frac{7}{8}$	44.00	$2\frac{3}{4}$	$1\frac{1}{2}$
1	63.00	$3\frac{1}{4}$	$1\frac{5}{8}$
$1\frac{1}{8}$	140.00	$4\frac{1}{2}$	2
$1\frac{1}{4}$	150.00	$4\frac{3}{4}$	$2\frac{1}{8}$
$1\frac{1}{2}$	220.00	$5\frac{1}{4}$	$2\frac{3}{8}$



Two-Unit Anchorage, Threaded

CINCH BRAND CALKING TOOLS

For Expanding Cinch Units



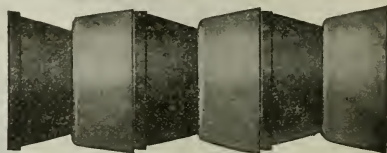
Diameter of Bolt	Price Each	Diameter of Bolt	Price Each
$\frac{3}{16}$	\$0.80	$\frac{1}{2}$	\$1.70
$\frac{1}{4}$	1.00	$\frac{5}{8}$	3.00
$\frac{5}{16}$	1.00	$\frac{3}{4}$	3.60
$\frac{3}{8}$	1.20	$\frac{7}{8}$	4.20
$\frac{7}{8}$	1.20	1	6.80

NOTE:—For the price of Cinch Specialties complete with Bolts, add our regular price for bolts. Cinch Anchorages are threaded for use with U. S. Standard Threads.

FOR OTHER TYPES OF EXPANSION BOLTS, SEE INDEX.

Price per Hundred Three-Unit Anchorages

Consisting of 6 pieces—3 Irons and 3 Lead Alloys. Without Bolts. Two Units Plain and One Unit Threaded, or all Three Units Plain.



Diameter of Bolt Sizes	Price per 100	Minimum Depth of Holes for 3 Units	Diameter of Hole and Drill Required
$\frac{3}{16}$	\$10.50	$1\frac{1}{8}$	$\frac{1}{2}$
$\frac{1}{4}$	12.00	$1\frac{1}{8}$	$\frac{5}{8}$
$\frac{5}{16}$	13.50	$1\frac{1}{8}$	$\frac{5}{8}$
$\frac{3}{8}$	16.50	$2\frac{1}{4}$	$\frac{13}{16}$
$\frac{7}{16}$	22.50	$2\frac{1}{4}$	$\frac{13}{16}$
$\frac{1}{2}$	27.00	$2\frac{5}{8}$	1
$\frac{5}{8}$	36.00	$2\frac{7}{8}$	$1\frac{1}{8}$
$\frac{3}{4}$	52.50	$3\frac{3}{8}$	$1\frac{3}{8}$
$\frac{7}{8}$	66.00	4	$1\frac{1}{2}$
1	94.50	$4\frac{7}{8}$	$1\frac{5}{8}$
$1\frac{1}{8}$	210.00	6	2
$1\frac{1}{4}$	225.00	$6\frac{1}{4}$	$2\frac{1}{8}$
$1\frac{1}{2}$	330.00	$7\frac{3}{4}$	$2\frac{3}{8}$

CINCH BRAND FOUR POINT DRILLS



Dimensions of Drills to Use

Diameter of Bolts	Diameter of Drills	Price per doz. 12 inches long
$\frac{3}{16}$	$\frac{1}{2}$	\$3.75
$\frac{1}{4}$	$\frac{5}{8}$	4.25
$\frac{5}{16}$	$\frac{3}{4}$	4.25
$\frac{3}{8}$	$\frac{13}{16}$	7.50
$\frac{7}{16}$	$\frac{1}{2}$	7.50
$\frac{1}{2}$	1	10.00
$\frac{5}{8}$	$1\frac{1}{8}$	11.50
$\frac{3}{4}$	$1\frac{3}{8}$	15.75

SEBCO EXPANSION BOLTS AND SHIELDS

Two Part



Malleable Iron

Fig. 605A

List January 19, 1911

PER HUNDRED, WITH SQUARE HEAD BOLTS

Dia. of Lag Screw Length inches	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$
$1\frac{1}{2}$	\$7.84	\$8.98	\$10.13	\$11.60	....	....	....	....	....	....	....	....
2	7.88	9.07	10.85	11.65	....	....	....	....	....	....	....	....
$2\frac{1}{2}$	7.93	9.16	11.00	11.85	\$15.90	\$20.30	\$24.15	\$31.70	\$48.30	....	....	....
3	7.99	9.28	11.25	12.00	16.10	20.50	24.45	32.10	48.85	....	....	....
4	8.17	9.55	11.50	12.35	16.40	20.80	25.35	32.90	50.00	....	....	....
5	...	...	11.85	12.65	16.90	21.15	25.90	33.75	51.05	....	....	....
6	...	...	12.20	13.00	17.35	21.50	26.45	34.60	52.20	\$68.90	\$79.55	....
7	...	...	....	13.30	17.65	21.80	27.00	35.40	53.30	70.00	81.65	....
8	...	...	....	....	18.00	22.15	27.55	36.25	54.45	71.10	83.70	\$174.45
9	...	...	....	....	....	22.50	28.10	37.10	55.55	72.20	85.75	181.10
10	...	...	....	....	....	....	....	37.95	56.68	73.30	87.75	187.75
11	...	...	....	....	....	....	....	38.80	57.75	74.40	89.90	194.45
12	...	...	....	....	....	....	....	39.60	58.90	75.55	92.00	201.10

SEBCO MALLEABLE IRON SHIELDS



Fig. 605B

PER HUNDRED, FOR SHIELDS ONLY

Dia. of Lag Screw . .	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$
Length of Shield	\$7.40	8.40	9.40	10.50	13.35	17.75	22.00	27.80	39.95	53.30	66.60	100.00
Long Standard	$1\frac{1}{2}$	2	$2\frac{3}{4}$	3	$3\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{1}{2}$	5	5	8
Length of Shield	$1\frac{1}{2}$	2	2	2	2	2	....	....	....
Short Standard	$1\frac{1}{2}$	....	$1\frac{1}{2}$	$1\frac{1}{2}$	....	....	....	....
Length of Shield	$1\frac{1}{2}$	....	$1\frac{1}{2}$	$1\frac{1}{2}$	....	....	....	....
Ex. Short Standard	$1\frac{1}{2}$	....	$1\frac{1}{2}$	$1\frac{1}{2}$	....	....	....	....
Outside Diameter	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$
of Shield	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$
Diameter of Drill	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$
Required	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$

FOR OTHER STYLES OF EXPANSION SHIELDS AND BOLTS, SEE INDEX

EXPANSION BOLTS AND SHIELDS

SAVAGE



Savage Shield Expanded

UNIVERSAL
EXPANSION
5 ARMS
WITH
10 ROWS OF
GRIPPING
TEETH

THE
SAVAGE GRIP
OVER
100 TEETH
WITH A
DEATH
HOLD

Prices per Hundred, with Square Head Bolts

Dia. of Lag Screw		$\frac{3}{16}$	$\frac{7}{32}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Length, in.,	1½	\$8.98	\$9.45	\$10.73	\$11.60	....	....	....	....	....	....	....
"	"	2	9.07	9.55	10.85	11.65	....	....	....	....	....	....
"	"	2½	9.16	9.65	11.00	11.85	\$15.90	\$20.30	\$24.15	\$31.70	\$48.30	....
"	"	3	9.28	9.80	11.25	12.00	16.10	20.50	24.45	32.10	48.85	....
"	"	4	9.55	10.10	11.50	12.35	16.40	20.80	25.35	32.90	50.00	....
"	"	5	....	....	11.85	12.65	16.90	21.15	25.90	33.75	51.05	....
"	"	6	....	....	12.20	13.00	17.35	21.50	26.45	34.60	52.20	\$68.90
"	"	7	....	....	....	13.30	17.65	21.80	27.00	35.40	53.30	70.00
"	"	8	....	....	....	....	18.00	22.15	27.55	36.25	54.45	71.10
"	"	9	....	....	....	....	....	22.50	28.10	37.10	55.55	72.20
"	"	10	....	....	....	....	....	....	....	37.95	56.65	73.30
"	"	11	....	....	....	....	....	....	....	38.80	57.75	74.40
"	"	12	....	....	....	....	....	....	....	39.60	58.90	75.55



Prices per hundred for Shields only

Dia. of Lag Bolt.	$\frac{3}{16}$	$\frac{7}{32}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1
Price	\$8.40	8.90	9.40	10.50	13.35	17.75	22.00	27.80	39.95	53.30	66.60
Lgt. of Standard	1¼	1¼	1¾	2	2½	2½	2¾	3½	3½	5	5
Lgt. of Short...	1	1	1¼	..	2	2	2	2	..	..	..
Size of Drill....	$\frac{7}{16}$	$\frac{7}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{7}{8}$	1	1¼	1¼

FOR OTHER TYPES OF EXPANSION BOLTS, SEE INDEX

WOOD SCREWS

BRIGHT, BLUED, JAPANNED AND GALVANIZED



Flat Head

Round Head

LIST OF JULY 22, 1903. PER GROSS

[illegible]

The number of Gross in a bundle is indicated by black figures on the side divided by a star ().

The following varieties of Iron Screws are invoiced from this list at varying discounts: Flat, Round, Piano, Fillister, and Oval Head Screws, Dovel and Fellow Screws, Bright, Blued, Brassed, Bronzed, Japanned, Lacquered, and Tinned, also Drive Screws.

BRASS WOOD SCREWS

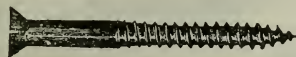


Fig. 59SA Flat Head

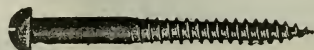


Fig. 59SB Round Head

LIST OF JULY 22, 1903

Per Gross

$\frac{1}{4}$ Inch	$\frac{3}{8}$ Inch	$\frac{1}{2}$ Inch	$\frac{5}{8}$ Inch	$\frac{3}{4}$ Inch	$\frac{7}{8}$ Inch	1 Inch
No.	No.	No.	No.	No.	No.	No.
0 \$0.84	0 \$0.84	1 \$0.92	1 \$0.96	2 \$1.12	2 \$1.40	3 \$1.65
1 .84	1 .87	2 .96	2 1.00	3 1.18	3 1.50	4 1.70
2 .88	2 .92	3 1.02	3 1.08	4 1.25	4 1.55	5 1.75
3 .92	3 .97	4 1.08	4 1.15	5 1.40	5 1.60	6 1.80
4 .97	4 1.04	5 1.20	5 1.30	6 1.55	6 1.65	7 2.10
5 1.04	5 1.12	6 1.30	6 1.40	7 1.75	7 1.90	8 2.45
	6 1.20	7 1.45	7 1.60	8 2.00	8 2.20	9 2.80
	7 1.35	8 1.65	8 1.85	9 2.30	9 2.50	10 3.15
	8 1.50	9 1.90	9 2.10	10 2.65	10 2.90	11 3.65
		10 2.15	10 2.40	11 3.00	11 3.35	12 4.10
			11 2.65	12 3.35	12 3.70	13 4.55
			12 3.00	13 3.70	13 4.10	14 5.05
			13 3.35	14 4.10	14 4.55	15 5.60
			14 3.70	15 4.55	15 5.05	16 6.65
			15 4.10	16 5.05	16 5.60	17
			16 4.55			18 7.40

$1\frac{1}{4}$ Inch	$1\frac{1}{2}$ Inch	$1\frac{3}{4}$ Inch	2 Inch	$2\frac{1}{4}$ Inch	$2\frac{1}{2}$ Inch	$2\frac{3}{4}$ Inch
No.	No.	No.	No.	No.	No.	No.
3 \$2.10	4 \$2.35	6 \$3.95	6 \$5.15	8 \$6.85	9 \$9.40	9 \$11.50
4 2.20	5 3.05	7 4.00	7 5.20	9 6.85	10 9.50	10 11.65
5 2.25	6 3.10	8 4.10	8 5.25	10 7.05	11 9.60	11 11.80
6 2.35	7 3.20	9 4.20	9 5.30	11 7.25	12 9.70	12 11.95
7 2.45	8 3.30	10 4.70	10 5.40	12 7.90	13 9.85	13 12.10
8 2.85	9 3.65	11 5.35	11 6.15	13 8.80	14 10.75	14 12.25
9 3.20	10 4.25	12 6.05	12 6.85	14 9.80	15 11.85	15 13.00
10 3.50	11 4.65	13 6.70	13 7.55	15 10.75	16 13.00	16 14.20
11 4.10	12 5.35	14 7.35	14 8.45	16 11.90	17 14.30	17 15.65
12 4.65	13 5.85	15 8.65	15 9.75	17 13.00	18 16.95	18 18.40
13 5.35	14 6.65	16 9.50	16 10.70	18 15.40	20 19.85	20 21.60
14 5.85	15 7.60	17 10.45	17 11.70	20 18.00	22 23.00	22 25.00
15 6.55	16 8.35	18 12.40	18 13.90	22 20.95	24 25.50	24 28.00
16 7.20	17 9.15	20 14.50	20 16.30	24 23.30		
17 7.85	18 10.85	22 16.85	22 18.90			
18 9.35	20 12.65	24 18.90	24 21.00			
20 10.45	22 14.50					

3 Inch	$3\frac{1}{2}$ Inch	4 Inch	$4\frac{1}{2}$ Inch	5 Inch	6 Inch
No.	No.	No.	No.	No.	No.
10 \$13.70	10 \$15.85	12 \$18.60	14 \$22.60	16 \$26.90	16 \$31.00
11 13.85	11 16.00	13 18.80	15 22.80	17 29.60	17 34.05
12 14.00	12 16.15	14 19.00	16 23.40	18 35.50	18 40.80
13 14.10	13 16.30	15 19.25	17 25.75	20 40.70	20 46.80
14 14.30	14 16.45	16 20.35	18 30.90	22 47.60	22 54.75
15 14.60	15 16.60	17 22.30	20 35.40	24 53.80	24 61.90
16 15.40	16 17.70	18 26.80	22 41.40	26 62.60	26 72.95
17 16.80	17 19.40	20 30.80	24 46.80	28 72.15	28 82.95
18 19.95	18 22.75	22 36.00	26 54.40	30 82.95	30 93.35
20 23.40	20 26.60	24 40.70	28 62.70		
22 27.10	22 31.20	26 47.35	30 72.15		
24 31.15	24 35.80	28 54.55			
26 35.85	26 41.20	30 62.70			
28 41.15	28 47.45				
30 47.45	30 54.55				

SCREW ANCHORS—EXPANSION SHIELDS

SEBCO SCREW ANCHORS



Patented.

List Prices per Hundred—WITHOUT SCREWS

Made of composition metal in one piece and so constructed that the screw cuts its own thread, thus permitting the use of all wood, machine and special screws. The Anchors hold equally well with any kind of screw.

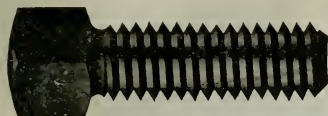
These Anchors will not break, chip, mar, rust or deface the finest marble or tile.

To Order, The Anchors alone are usually ordered as they are used with regular screws. Should the screw be desired, add the length of the Anchor to the thickness of the material fastened, and you will have the right length of screw.

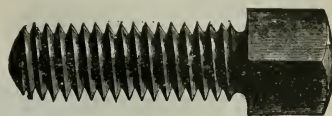
If electric drill is used, the cutting edge should be from 1/32 to 1/16 inch over the size shown above.

Diameter and Length of Anchor inches	Fit All Screws Nos.	Outside Diameter and Drill Required inches	Box Contains	Shipping Weight per 100 lbs.	Price per 100
1/8 x 1/2	5, 6, 7, 8	1/4	100	2 1/2	\$4.40
1/8 x 3/4	5, 6, 7, 8	1/4	100	2 1/2	4.40
1/8 x 1	5, 6, 7, 8	1/4	100	2 1/2	4.40
1/8 x 1 1/2	5, 6, 7, 8	1/4	100	2 1/2	4.40
1/8 x 1 3/4	9, 10, 11, 12	1/4	100	2 1/2	5.00
1/8 x 2	9, 10, 11, 12	1/4	100	2 1/2	5.00
1/8 x 2 1/2	9, 10, 11, 12	1/4	100	2 1/2	5.00
1/8 x 3	9, 10, 11, 12	1/4	100	2 1/2	5.00
1/8 x 3 1/2	13, 14, 15	1/4	100	4	6.25
1/8 x 4	13, 14, 15	1/4	100	3 1/2	5.60
1/8 x 4 1/2	13, 14, 15	1/4	100	3 1/2	5.60
1/8 x 5	13, 14, 15	1/4	100	3 1/2	5.60
1/8 x 5 1/2	13, 14, 15	1/4	50	6	8.00
1/8 x 6	13, 14, 15	1/4	50	7	10.00
1/8 x 6 1/2	16, 17, 18	1/4	50	5	6.25
1/8 x 7	16, 17, 18	1/4	50	5	6.25
1/8 x 7 1/2	16, 17, 18	1/4	50	8	10.00
1/8 x 8	16, 17, 18	1/4	50	10	13.00
1/8 x 8 1/2	20, 22, 24	1/4	50	10	13.00
1/8 x 9	20, 22, 24	1/4	50	16	15.00
1/8 x 9 1/2	26, 28, 30	1/4	50	24	25.00
1/8 x 10	26, 28, 30	1/4	50	32	30.00
1/8 x 10 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 11	26, 28, 30	1/4	50	56	50.00
1/8 x 11 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 12	26, 28, 30	1/4	50	56	50.00
1/8 x 12 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 13	26, 28, 30	1/4	50	56	50.00
1/8 x 13 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 14	26, 28, 30	1/4	50	56	50.00
1/8 x 14 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 15	26, 28, 30	1/4	50	56	50.00
1/8 x 15 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 16	26, 28, 30	1/4	50	56	50.00
1/8 x 16 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 17	26, 28, 30	1/4	50	56	50.00
1/8 x 17 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 18	26, 28, 30	1/4	50	56	50.00
1/8 x 18 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 19	26, 28, 30	1/4	50	56	50.00
1/8 x 19 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 20	26, 28, 30	1/4	50	56	50.00
1/8 x 20 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 21	26, 28, 30	1/4	50	56	50.00
1/8 x 21 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 22	26, 28, 30	1/4	50	56	50.00
1/8 x 22 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 23	26, 28, 30	1/4	50	56	50.00
1/8 x 23 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 24	26, 28, 30	1/4	50	56	50.00
1/8 x 24 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 25	26, 28, 30	1/4	50	56	50.00
1/8 x 25 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 26	26, 28, 30	1/4	50	56	50.00
1/8 x 26 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 27	26, 28, 30	1/4	50	56	50.00
1/8 x 27 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 28	26, 28, 30	1/4	50	56	50.00
1/8 x 28 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 29	26, 28, 30	1/4	50	56	50.00
1/8 x 29 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 30	26, 28, 30	1/4	50	56	50.00
1/8 x 30 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 31	26, 28, 30	1/4	50	56	50.00
1/8 x 31 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 32	26, 28, 30	1/4	50	56	50.00
1/8 x 32 1/2	26, 28, 30	1/4	50	56	50.00
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1/8 x 33 1/2	26, 28, 30	1/4	50	56	50.00
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1/8 x 34 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 35	26, 28, 30	1/4	50	56	50.00
1/8 x 35 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 36	26, 28, 30	1/4	50	56	50.00
1/8 x 36 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 37	26, 28, 30	1/4	50	56	50.00
1/8 x 37 1/2	26, 28, 30	1/4	50	56	50.00
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1/8 x 38 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 39	26, 28, 30	1/4	50	56	50.00
1/8 x 39 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 40	26, 28, 30	1/4	50	56	50.00
1/8 x 40 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 41	26, 28, 30	1/4	50	56	50.00
1/8 x 41 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 42	26, 28, 30	1/4	50	56	50.00
1/8 x 42 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 43	26, 28, 30	1/4	50	56	50.00
1/8 x 43 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 44	26, 28, 30	1/4	50	56	50.00
1/8 x 44 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 45	26, 28, 30	1/4	50	56	50.00
1/8 x 45 1/2	26, 28, 30	1/4	50	56	50.00
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1/8 x 46 1/2	26, 28, 30	1/4	50	56	50.00
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1/8 x 49 1/2	26, 28, 30	1/4	50	56	50.00
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1/8 x 62 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 63	26, 28, 30	1/4	50	56	50.00
1/8 x 63 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 64	26, 28, 30	1/4	50	56	50.00
1/8 x 64 1/2	26, 28, 30	1/4	50	56	50.00
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1/8 x 65 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 66	26, 28, 30	1/4	50	56	50.00
1/8 x 66 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 67	26, 28, 30	1/4	50	56	50.00
1/8 x 67 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 68	26, 28, 30	1/4	50	56	50.00
1/8 x 68 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 69	26, 28, 30	1/4	50	56	50.00
1/8 x 69 1/2	26, 28, 30	1/4	50	56	50.00
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1/8 x 70 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 71	26, 28, 30	1/4	50	56	50.00
1/8 x 71 1/2	26, 28, 30	1/4	50	56	50.00
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1/8 x 73	26, 28, 30	1/4	50	56	50.00
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1/8 x 84	26, 28, 30	1/4	50	56	50.00
1/8 x 84 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 85	26, 28, 30	1/4	50	56	50.00
1/8 x 85 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 86	26, 28, 30	1/4	50	56	50.00
1/8 x 86 1/2	26, 28, 30	1/4	50	56	50.00
1/8 x 87	26, 28, 30	1/4	50	56	50.00
1/8 x 87 1/2	26, 28, 30	1/4	50	56	50.00

SET SCREWS



Cup Point Set Screw

IRON
SET
SCREWS

Oval Point Set Screw

Per 100—Adopted April 1, 1905

Diameter of Screw	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1-1/8	1-1/4
1/2	\$1.80	\$2.00	\$2.35									
5/8	1.90	2.10	2.45	\$2.80	\$3.30							
3/4	2.00	2.20	2.50	2.90	3.40	\$5.00	\$5.00					
7/8	2.10	2.30	2.60	3.00	3.60	5.50	5.50					
1	2.15	2.35	2.65	3.10	3.80	5.75	5.75	\$10.00				
1 1/4	2.30	2.50	2.85	3.50	4.30	6.50	6.50	11.00	\$15.50			
1 1/2	2.50	2.70	3.10	4.00	4.80	7.25	7.25	12.00	16.20	\$22.00		
1 3/4	2.75	3.00	3.50	4.50	5.40	8.00	8.00	12.80	17.70	24.00	\$41.70	
2	3.25	3.50	4.00	5.15	6.00	8.80	8.80	13.60	19.20	26.00	45.00	\$54.00
2 1/4	3.75	4.00	4.50	5.75	6.75	9.60	9.60	14.50	20.70	28.00	48.30	58.30
2 1/2	4.25	4.50	5.00	6.35	7.50	10.40	10.40	15.40	22.20	30.00	51.60	62.60
2 3/4	4.75	5.00	5.50	6.75	8.25	11.20	11.20	16.30	23.70	32.00	54.90	66.90
3	5.25	5.50	6.00	7.20	9.00	12.00	12.00	17.30	25.20	34.00	58.20	71.20
3 1/4				7.60	9.75	12.75	12.75	18.40	26.70	36.00	61.50	75.50
3 1/2				8.00	10.50	13.50	13.50	19.50	28.20	38.00	64.80	79.80
3 3/4				8.50	11.25	14.30	14.30	20.75	29.70	40.00	68.10	84.10
4				9.00	12.00	15.10	15.10	22.00	31.20	42.00	71.40	88.40
4 1/4							15.90	23.50	32.70	44.00	74.70	92.70
4 1/2							16.70	25.00	34.20	46.00	78.00	97.00
4 3/4								26.50	35.70	48.00	81.30	101.30
5									37.20	50.00	84.60	105.60
Threads to inch	20	18	16	14	12	12	11	10	9	8	7	7
Add for each 1/4 inch	\$0.50	\$0.60	\$0.70	\$0.80	\$0.90	\$1.10	\$1.10	\$1.50	\$1.70	\$2.25	\$3.30	\$4.30

For List Price of Steel Set Screws, Add 25 Per Cent to the Above



SOCKET SET SCREWS

Steel—Cup Point—Case Hardened

The wide demand for socket set screws compelled us to increase materially quantity carried, and we are now prepared to furnish from stock all sizes listed below.

These screws are true to size with clean, accurate threads and will answer every purpose for which they are designed. They are carried in stock with cup points and both U. S. S. and V threads, although any style of point or thread can be supplied to special order.

These screws are milled from special steel bars and case hardened, have die cut threads and will follow standard taps closely.

A WRENCH IS PACKED WITH EACH BOX OF SCREWS

Size	Threads to inch	List Price per 100	Number in box
5/16 x 1 1/2	18	\$3.00	100
3/8 x 1 1/2	16	3.30	100
1/2 x 1 1/2	14	3.60	100
5/8 x 1 1/2	13 (or 12)	3.90	100
3/4 x 1 1/2	12	4.70	50
7/8 x 1 1/2	11	5.40	50
1 x 1 1/2	10	8.40	50
1 1/4 x 1 1/2	9	12.50	25
1 1/2 x 1 1/2	8	16.75	25

*13 threads will always be sent on screws of 1/2 inch diameter U. S. S. and 12 threads on 1/2 inch V unless otherwise specified.

CASE HARDENED
WRENCHESLIST PRICES
Price Per 100

5/8	\$1.50
3/4	1.50
1/2	2.30
3/8	2.30
5/16	2.65
3/16	3.00
1/8	4.50
1/16	6.50
1/32	9.50



Socket Set Screw Wrench

FOR WRENCHES, TAPS AND DIES, SEE INDEX

CAP SCREWS

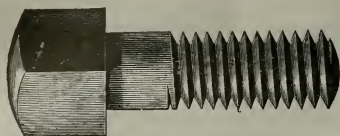


Fig. 351A. Square Head



Fig. 351A. Hexagon Head

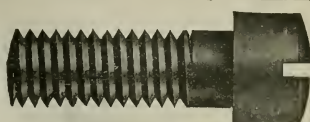
1. Cap Screws having heads that are ground and of dimensions and threads listed, are regular.
2. On all screws of one inch and less in diameter and four inches long and under, threads are cut $\frac{3}{4}$ of the length; longer than four inches, threads are cut half of the length.
3. For case hardening add 15 per cent to net price of regular Cap Screws.
4. In ordering specify diameter of screw.

PRICE PER 100

SQUARE HEAD		$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Diameter of Head		$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
HEXAGON HEAD		$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Diameter of Head		$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
Length of Head		$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Diameter of Screw		$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Length under Head to Extreme Point	$\frac{3}{4}$	\$3.00	\$3.25	\$3.75	\$4.50	\$5.70	....	....	....	....	....	....	....
	$\frac{7}{8}$	3.15	3.40	3.90	4.70	5.80	....	....	....	....	....	....	....
	1	3.25	3.50	4.00	4.90	5.90	\$9.25	\$9.25	....	....	....	....	....
	$1\frac{1}{4}$	3.50	3.75	4.25	5.30	6.50	9.50	9.50	\$12.50	....	....	....	....
	$1\frac{1}{2}$	3.75	4.00	4.50	5.70	7.10	10.00	10.00	13.50	\$18.40	....	....	....
	$1\frac{3}{4}$	4.00	4.25	4.85	6.10	7.70	10.75	10.75	14.50	19.70	\$22.75	....	....
	2	4.25	4.85	5.20	6.50	8.30	11.50	11.50	15.50	21.00	25.00	\$34.00	\$38.50
	$2\frac{1}{4}$	4.70	5.35	5.55	7.15	8.90	12.60	12.60	16.50	22.40	27.25	36.75	42.00
	$2\frac{1}{2}$	5.25	5.80	6.00	7.50	9.50	13.60	13.60	17.50	23.70	29.50	39.50	45.50
	$2\frac{3}{4}$	5.75	6.30	6.65	7.90	10.10	14.40	14.40	19.00	25.00	31.75	42.25	49.00
	3	6.25	6.80	7.20	8.40	10.70	15.20	15.20	20.60	26.40	34.00	45.00	52.50
	$3\frac{1}{4}$	....	....	....	9.15	11.50	16.00	16.00	22.10	28.20	36.25	47.75	56.00
	$3\frac{1}{2}$	....	....	....	9.75	12.30	17.30	17.30	23.70	30.00	38.50	50.50	59.50
	$3\frac{3}{4}$	....	....	....	10.50	13.10	18.60	18.60	25.30	31.80	40.75	53.25	63.00
	4	....	....	....	11.10	13.90	19.90	19.90	26.90	33.60	43.00	56.00	66.50
	$4\frac{1}{4}$	....	....	....	....	....	....	21.20	28.50	35.40	45.25	58.75	70.00
	$4\frac{1}{2}$	....	....	....	....	....	....	22.50	30.10	37.20	47.50	61.50	73.50
	$4\frac{3}{4}$	....	....	....	....	....	....	....	31.70	39.00	49.75	64.25	77.00
	5	....	....	....	....	....	....	....	....	40.80	52.00	67.00	80.50
Threads to inch		20	18	16	14	12 or 13	12	11	10	9	8	7	7
Add for each $\frac{1}{4}$ inch		.40	.50	.60	.70	.80	1.30	1.30	1.60	1.80	2.25	2.75	3.50



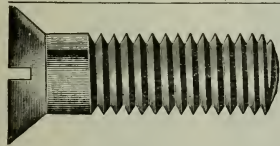
FILLISTER HEAD CAP SCREWS



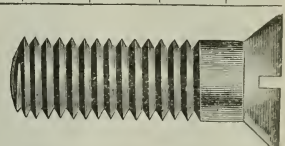
1. Fillister Head Cap Screws are milled from bars slightly larger than the heads. The heads are true with the body and are well finished.
2. Length of heads is the same as diameter of screws.
3. Fillister Heads, ordinary sizes only, carried in stock; all others made to order at special price governed by quantity.

Prices per 100

Diam. of Head	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$1\frac{1}{8}$	$\frac{7}{8}$	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	
Diam. of Screw	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1
$\frac{3}{4}$	\$2.00	\$2.25	\$2.50	\$3.00	\$3.50	\$4.00	\$5.00	.....	.....	.....	.....	.....
1	2.25	2.50	2.75	3.25	3.75	4.25	5.30	\$6.60	.....	.....	.....	.....
1 $\frac{1}{4}$	2.50	2.75	3.00	3.50	4.00	4.50	5.60	6.90	\$9.00	.....	.....	.....
1 $\frac{1}{2}$	2.75	3.00	3.25	3.75	4.25	4.75	5.90	7.20	9.50	\$12.00	.....	.....
1 $\frac{3}{4}$	3.00	3.25	3.50	4.00	4.50	5.00	6.20	7.50	10.00	12.50	\$15.25	.....
2	3.25	3.50	3.75	4.35	5.00	5.50	6.75	8.00	10.75	13.00	16.00	\$19.20
2 $\frac{1}{4}$	3.50	3.75	4.00	4.75	5.50	6.00	7.25	8.50	11.50	13.75	16.75	20.20
2 $\frac{1}{2}$	3.75	4.00	4.25	5.15	6.00	6.50	7.75	9.00	12.00	14.50	17.50	21.25
2 $\frac{3}{4}$	4.00	4.25	4.50	5.55	6.50	7.00	8.25	9.50	12.75	15.25	18.30	22.40
3	4.25	4.50	4.75	5.85	7.00	7.50	8.75	10.00	13.50	16.00	19.10	23.60
3 $\frac{1}{4}$	.....	4.75	5.00	6.35	7.50	8.00	9.25	10.50	14.25	16.75	20.00	24.85
3 $\frac{1}{2}$	.....	.....	5.25	6.75	8.00	8.50	9.75	11.00	15.00	17.50	21.00	26.10
3 $\frac{3}{4}$	.....	.....	.....	7.15	8.50	9.00	10.25	11.50	15.75	18.25	22.00	27.35
4	.....	.....	.....	.....	9.00	9.50	10.75	12.00	16.50	19.00	22.00	28.60
4 $\frac{1}{4}$	.....	.....	.....	.....	.....	10.00	11.25	12.50	17.25	19.75	24.00	29.85
4 $\frac{1}{2}$	.....	.....	.....	.....	.....	.....	11.75	13.00	18.00	20.50	25.00	31.10
4 $\frac{3}{4}$	.....	.....	.....	.....	.....	.....	12.25	13.50	18.75	21.25	26.00	32.35
5	.....	.....	.....	.....	.....	.....	12.75	14.00	19.50	22.00	27.00	33.60
5 $\frac{1}{4}$	.....	.....	.....	.....	.....	.....	13.25	14.50	20.25	22.75	28.00	34.85
5 $\frac{1}{2}$	.....	.....	.....	.....	.....	.....	13.75	15.00	21.00	23.50	29.00	36.10
5 $\frac{3}{4}$	.....	.....	.....	.....	.....	.....	14.25	15.50	21.75	24.25	30.00	37.35
6	.....	.....	.....	.....	.....	.....	14.75	16.00	22.50	25.00	31.00	38.60
Thr'ds to inch	40	24	20	18	16	14	12 or 13	12	11	10	9	8



FLAT HEAD CAP SCREWS



MILLED FROM SOLID BAR

1. Flat Head Cap Screws are made in same manner as Fillister Heads.
2. Flat Head Cap Screws are measured over all for length. Ordinary sizes only carried in stock; all others made to order.

Prices per 100

Diameter of Head	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$1\frac{1}{8}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Diameter of Screw	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$
Threads to inch	40	24	20	18	16	14	$\frac{12}{13}$	12	11	10
$\frac{3}{4}$	\$2.25	\$2.50	\$3.10	\$4.00	\$5.00	.....	.....	.....	.....	.....
1	2.50	2.75	3.35	4.25	5.30	\$6.60	.....	.....	.....	.....
$1\frac{1}{4}$	2.75	3.00	3.60	4.50	5.60	6.90	\$9.00	.....	.....	.....
$1\frac{1}{2}$	3.00	3.25	3.85	4.75	5.90	7.20	9.50	\$12.00	.....	.....
$1\frac{3}{4}$	3.25	3.50	4.10	5.00	6.20	7.50	10.00	12.50	\$14.50	.....
2	.....	3.75	4.35	5.50	6.75	8.00	10.75	13.00	15.25	\$19.20
$2\frac{1}{4}$	.....	.....	4.75	6.00	7.25	8.50	11.50	13.75	16.00	20.20
$2\frac{1}{2}$	.....	.....	.....	6.50	7.75	9.00	12.00	14.50	16.75	21.25
$2\frac{3}{4}$	.....	.....	.....	7.00	8.25	9.50	12.75	15.25	17.50	22.40
3	.....	.....	.....	.....	8.75	10.00	13.50	16.00	18.30	23.60
Add for each $\frac{1}{4}$ inch	.25	.25	.40	.50	.50	.50	.50	.75	1.00	1.25

FOR MACHINISTS TOOLS—SEE INDEX

IRON MACHINE SCREWS



Fig. 596A. Flat Head



Fig. 596B. Round Head



Fig. 596C. Fillister Head

PRICE PER GROSS

Nc	2	3	4	5	6	7	8	9	10	12	14	16	18	20	24	28	30	34
In.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
$\frac{1}{8}$	.30	.30	.30	.35	.35	.40	.40	...	...	...	...	...	...	...	...	...	...	...
$\frac{1}{8}$	.30	.30	.30	.35	.35	.40	.40	.60	.60	...	...	...	...	...	...	...	...	...
$\frac{1}{4}$	.30	.30	.30	.35	.35	.40	.40	.60	.60	.70	.85	...	...	...	...	...	...	...
$\frac{1}{4}$	.32	.32	.32	.37	.37	.44	.44	.65	.65	.75	.90	1.15	...	...	...	...	...	...
$\frac{3}{8}$	.32	.32	.32	.37	.37	.44	.44	.65	.65	.75	.90	1.15	1.50	1.90	2.30	...	...	...
$\frac{3}{8}$	.34	.34	.34	.39	.39	.48	.48	.70	.70	.80	.95	1.20	1.60	2.00	2.40	...	...	...
$\frac{1}{2}$	.34	.34	.34	.39	.39	.48	.48	.70	.70	.80	.95	1.20	1.60	2.00	2.40	...	...	...
$\frac{1}{2}$	.37	.37	.37	.42	.42	.52	.52	.75	.75	.85	1.00	1.25	1.70	2.10	2.50	...	...	...
$\frac{3}{4}$	.37	.37	.37	.42	.42	.52	.52	.75	.75	.85	1.00	1.25	1.70	2.10	2.50	...	...	...
$\frac{3}{4}$	.41	.41	.41	.46	.46	.55	...	...	...	...	...	...	...	...	...	...	...	...
$\frac{3}{4}$	.41	.41	.41	.46	.46	.56	.56	.80	.80	.90	1.05	1.30	1.80	2.20	2.60	3.20	4.00	5.10
$\frac{1}{1}$	.45	.45	.45	.50	.50	...	...	...	...	...	...	...	...	...	...	...	...	...
$\frac{7}{8}$	.45	.45	.45	.50	.50	.60	.60	.85	.85	.95	1.15	1.40	1.90	2.30	2.70	3.30	4.25	5.85
$\frac{1}{1}$	...	...	.50	.55	.55	...	...	...	...	...	...	...	...	...	...	...	...	...
1	...	...	.55	.60	.60	.70	.70	1.00	1.00	1.00	1.25	1.50	2.00	2.40	2.80	3.75	4.50	6.60
$1\frac{1}{8}$	...	...	.55	.60	.60	.70	.70	1.00	1.00	1.10	1.35	1.60	2.20	2.60	3.00	4.00	5.00	7.00
$1\frac{1}{4}$	...	...	.60	.65	.65	.75	.75	1.10	1.10	1.20	1.45	1.75	2.40	2.80	3.20	4.35	5.25	7.35
$1\frac{1}{2}$	...	...	.65	.70	.70	.80	.80	1.20	1.20	1.30	1.55	1.90	2.60	3.00	3.40	4.80	5.75	8.00
$1\frac{1}{2}$	...	...	.70	.75	.75	.85	.85	1.30	1.30	1.40	1.65	2.10	2.80	3.20	3.60	5.10	6.00	8.00
$1\frac{3}{8}$	...	...	.80	.85	.85	.95	.95	1.40	1.40	1.50	1.75	2.30	3.00	3.40	3.80	5.70	6.35	...
$1\frac{3}{8}$	...	...	.90	.95	.95	1.05	1.05	1.50	1.50	1.60	1.85	2.50	3.20	3.60	4.20	5.70	6.65	8.60
$1\frac{3}{8}$	...	...	1.00	1.05	1.05	1.15	1.15	1.60	1.60	1.70	2.00	2.70	3.40	3.80	4.40	6.35	7.00	...
2	...	...	1.10	1.15	1.15	1.25	1.25	1.70	1.70	1.80	2.20	2.90	3.60	4.00	4.60	6.35	7.35	9.40
$2\frac{1}{4}$	...	...	...	1.25	1.25	1.45	1.45	1.90	1.90	2.20	2.60	3.30	4.00	4.40	4.80	6.90	8.00	10.30
$2\frac{1}{2}$	...	...	...	...	...	1.65	1.65	2.20	2.20	2.50	2.80	3.50	4.40	4.90	5.30	7.75	8.90	11.50
$2\frac{3}{4}$	...	...	...	...	...	1.90	1.90	2.50	2.50	2.90	3.20	4.00	4.90	5.40	5.90	8.60	9.85	...
3	...	...	...	...	...	2.30	2.30	2.90	2.90	3.50	3.80	4.50	5.60	6.00	7.40	9.70	11.00	...
$3\frac{1}{4}$	...	...	...	...	...	...	...	3.30	3.30	4.25	4.50	5.50	6.50	7.00	8.80	11.50	13.00	...
$3\frac{1}{2}$	...	...	...	...	...	...	...	3.75	3.75	5.00	5.25	6.50	7.50	8.25	10.10	13.20	15.00	...
$3\frac{3}{4}$	...	...	...	...	...	...	...	...	...	...	6.00	7.50	8.50	9.25	12.20	14.70	17.50	...
4	...	...	...	...	...	...	...	...	...	...	6.75	8.50	9.60	10.25	13.50	16.50	20.50	...
Diam. About	56	48	32, 36, 40	30	30	30	24, 30, 32	20, 24	16, 18, 20	16, 18	14, 16	13						
	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$

On Machine Screws, made to order, differing in length, size, thread or head from our regulation Standard Flat, Round and Fillister Head Screws, special prices will be quoted on application.

FOR MACHINE SCREW-NUTS, SEE INDEX

BRASS MACHINE SCREW LIST—November 18, 1912

OUR STANDARD THREADS PER INCH

COCK STANDARD THREADS PER ANCH																	
Thread to In.	48 56 64	48 56	32, 36, 40	30 32 36	30 32 36	30 32 36	24, 30, 32	20 24	18 20 24	16, 18, 20	16 18	14 16 18	14 16	13			
No.	2	3	4	5	6	7	8	9	10	12	14	16	18	20	30	34	
In.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	
1/16	32	32	36	46	46	70	70	100	100	125	165	210	250	300	370	460	
1/8	32	32	36	46	46	70	70	100	100	125	165	210	250	300	370	460	
1/4	32	32	36	46	46	70	70	100	100	125	165	210	250	300	370	460	
3/8	34	34	38	49	49	75	75	105	105	135	175	220	260	320	400	500	
1/2	36	36	40	52	52	80	80	110	110	145	185	230	280	340	430	540	
5/8	38	38	42	55	55	85	85	115	115	155	200	250	300	360	450	560	
3/4	40	40	44	58	58	90	90	125	125	165	215	270	330	400	500	620	
7/8	43	43	47	62	62	95	95	135	135	175	230	290	360	440	550	680	
1	46	46	50	66	66	100	100	145	145	185	245	310	390	480	600	750	
1 1/8	49	49	53	70	70	110	110	165	165	215	280	360	450	560	700	880	
1 1/4	52	52	56	74	74	110	110	165	165	215	280	360	450	560	700	880	
1 1/2	55	55	59	78	78	120	120	185	185	240	310	400	500	620	780	990	
1 3/4	58	58	62	82	82	120	120	185	185	240	310	400	500	620	780	990	
2	65	65	86	86	86	130	130	205	205	265	340	440	560	700	880	1120	
2 1/8	70	70	90	90	90	145	145	220	220	285	365	470	600	750	900	1150	
2 1/4	80	80	105	105	105	160	160	235	235	285	375	490	630	800	990	1250	
2 1/2	90	90	120	120	120	180	180	265	265	325	415	530	670	850	1050	1350	
2 3/4	100	100	135	135	135	175	175	250	250	305	395	520	660	850	1150	1550	
3	110	110	150	150	150	190	190	265	265	325	415	530	670	850	1150	1550	
3 1/8	125	125	170	170	170	210	210	285	285	350	440	565	730	950	1270	1690	
3 1/4	140	140	190	190	190	230	230	305	305	375	465	620	770	1000	1270	1690	
3 1/2	155	155	210	210	210	250	250	325	325	400	490	650	810	1050	1350	1800	
3 3/4	170	170	230	230	230	270	270	345	345	425	515	700	860	1100	1350	1800	
4	220	220	270	270	270	310	310	385	385	475	565	800	975	1200	1490	2000	
4 1/8	270	270	310	310	310	350	350	465	465	580	680	900	1050	1350	1550	2000	
4 1/4	310	310	350	350	350	390	390	520	520	640	760	1000	1250	1500	1700	2200	
4 1/2	350	350	390	390	390	430	430	580	580	720	880	1100	1350	1600	1800	2300	
4 3/4	400	400	440	440	440	480	480	650	650	800	980	1200	1500	1800	2100	2700	
5	450	450	490	490	490	530	530	720	720	880	1100	1350	1650	2000	2400	3000	
5 1/8	500	500	540	540	540	580	580	800	800	980	1200	1500	1850	2250	2700	3400	
5 1/4	550	550	590	590	590	630	630	880	880	1080	1350	1700	2100	2550	3100	3900	
5 1/2	600	600	640	640	640	680	680	950	950	1180	1450	1850	2300	2850	3500	4400	
5 3/4	650	650	690	690	690	730	730	1050	1050	1300	1600	2050	2550	3200	4000	5000	
6	700	700	740	740	740	780	780	1100	1100	1380	1700	2200	2750	3450	4300	5400	

PLOW AND CULTIVATOR BOLTS



Fig. 1

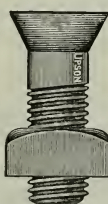


Fig. 2



Fig. 3



Fig. 4

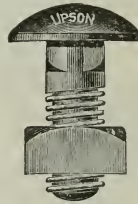


Fig. 5

PLEASE ORDER BY FIGURE NUMBER TO AVOID MISTAKE

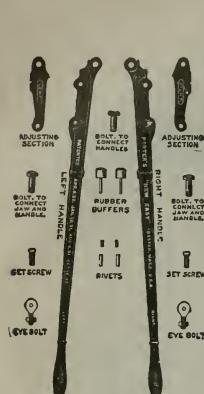
In ordering Plow Bolts, please state what style heads are desired. Right-hand threads will be sent, unless left-hand threads are ordered. Left-hand threads, 10 per cent. extra.

Most styles are made to order only, so please allow as much time as possible in ordering.

Price per 100

Length inches	5/16 inch	3/8 inch	7/16 inch	1/2 inch	9/16 inch	5/8 inch	3/4 inch
1 1/4	\$1.70	\$2.00	\$2.60	\$3.50	\$4.50	\$5.70	\$7.70
1 1/2	1.80	2.10	2.75	3.70	4.75	6.00	7.70
1 3/4	1.90	2.20	2.90	3.90	5.00	6.30	7.98
2	2.00	2.30	3.05	4.10	5.25	6.60	8.25
2 1/4	2.10	2.40	3.20	4.30	5.50	6.90	8.53
2 1/2	2.20	2.50	3.35	4.50	5.75	7.20	8.80

FOR ALL STYLES OF WRENCHES, SEE INDEX

Parts of "New Easy"
Handle**"NEW EASY" BOLT CLIPPERS**

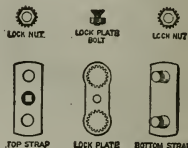
Made of the best stock, in the most careful manner, by skilled workmen with special machinery and tools. All parts are made in duplicate to standard gauges and will always fit. The simple turn of a screw provides ample adjustment (from one thousandth of an inch up), always keeping the cutting edges in contact during the life of the jaws.

If the clipper is used according to directions, they will last a long time and pay for themselves many times over.

The handles are of jappanned malleable iron, tough and strong; the buffers are high quality rubber springs; the jaws are high grade tool steel, of a temper shown by long experience to be the best for cutting annealed bolts and rivets. The jaws can be dressed when necessary with a mill file.

Jaws of special temper can be furnished to cut special materials.

No.	0	1	2	3
List	\$2.75	\$5.00	\$7.00	\$9.00
Weight, in lbs.	3	5 1/2	9	13
Length, inches	18	24 1/2	30	36
To cut annealed bolts in thread, inches	1/8	3/8	1/2	5/8

Parts of "New Easy"
Heads**"NEW EASY" BOLT CLIPPER PARTS**

	No. 0		No. 1		No. 2		No. 3	
	Price	oz.	Price	oz.	Price	oz.	Price	oz.
Cutter Head, complete (see cuts of parts)	\$2.10	18	\$2.70	32	\$3.70	50	\$4.65	77
Pair Cutting Jaws, ready for use	1.35	12	1.65	21	2.35	33	3.00	52
One Cutting Jaw, ready for use	.65	6	.83	11	1.13	17	1.50	26
Bottom Strap, with two steel bolts	.40	4	.50	6	.60	9	.70	12
Top Strap	.10	2	.20	5	.30	6	.40	7
Lock Nuts, pair	.10	1	.15	1	.20	2	.25	2
Lock Plate	.10	1	.15	1	.20	2	.25	2
Lock Plate Bolt	.05	1	.05	1	.05	1	.05	1
HANDLES AND PARTS								
Pair of Handles, complete (see cuts of parts)	1.90	31	2.30	57	3.30	85	4.35	128
One Handle, complete	.95	16	1.15	30	1.65	44	2.20	63
One Handle, without parts, long piece only	.40	11	.50	21	.90	33	1.35	46
Adjusting Sections, with one rivet, each	.25	4	.35	7	.45	9	.60	14
Steel Adjusting Screws, pair	.10	1	.12	2	.14	2	.16	3
Steel Bolts, to connect jaws and handles, pair	.10	1	.12	2	.14	2	.16	3
Eye Bolts, with nuts and rivets, pair	.20	2	.25	3	.30	4	.35	6
Rubber Buffers, with rivets and washers, pair	.20	2	.25	2	.30	2	.35	3

BOLT AND NUT CUTTERS AND SPLITTERSStyle A
Straight CutterStyle N. Straight End Cut with Nut Splitter
THE "CAROLUS" NUT SPLITTERS AND BOLT CLIPPERS
A Money and Labor Saver

Built in three sizes and have three different cutting blades for each size, enabling the user to select the cutter best suited to his needs.

Carolus Hand Bolt Clippers will cut bolts or iron at almost any angle anywhere.

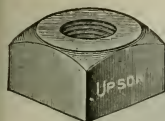
Style B
Straight and
End Cutter

Capacity	Straight Cut (A)			End Cut (B)			End Cut with Nut Splitter (N)		
	No.	Wt., packed for parcel post	Price	No.	Wt., packed for parcel post	Price	No.	Wt., packed for parcel post	Price
3/4 inch	0A	4 lb.	\$1.75	0B	4 lb.	\$2.50	0N	4 lb.	\$2.75
1/2 inch	1A	6 lb.	2.50	1B	7 lb.	3.50	1N	7 lb.	3.75
3/8 inch	2A	11 lb.	3.50	2B	11 lb.	4.50	2N	11 lb.	5.00
1/4 inch	3A	17 lb.	4.50	3B	17 lb.	5.75			

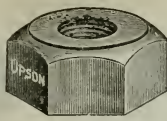
EXTRA PARTS FOR CAROLUS BOLT CLIPPERS

	1/4 In. Clipper	Par. Post Weight lbs. oz.	3/8 In. Clipper	Par. Post Weight lbs. oz.	1/2 In. Clipper	Par. Post Weight lbs. oz.	3/4 In. Clipper	Par. Post Weight lbs. oz.
One straight cut jaw	\$0.50	1	\$0.65	1	\$0.85	2	\$1.15	2
One end cut jaw	.70	1	.85	1	1.15	2	1.50	2
One handle, complete	.70	2	.85	2	1.20	3	1.65	5
One adj. section with 1 rivet	.20	4	.25	1	.40	1	.50	2
Plate bolt	.12	1	.18	2	.25	3	.35	4
Sliding bolt	.06	2	.07	2	.09	3	.11	4
Rubber bumper and rivet	.08	1	.10	1	.10	1	.12	1
Jaw and handle pin	.05	1	.05	1	.05	1	.05	1

NUTS



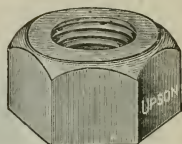
Square



Hexagon



Square



Hexagon

United States Standard List. List Adopted January 1, 1906
HOT PRESSED COLD PUNCHED
Per 100 Pounds Per 100 Pounds

Short Diam.	Thick-ness	Hole	Size of Bolt	Square Blank	Square Tapped	Hexa-gon Blank	Hexa-gon Tapped	Short Diam.	Thick-ness	Hole	Size of Bolt	Square Blank	Square Tapped	Hexa-gon Blank	Hexa-gon Tapped
1/2	1/4	1/8	1/4	\$13.00	\$15.00	\$20.00	\$22.50	1/2	1/4	1/8	1/4	\$13.80	\$15.80	\$21.00	\$23.50
3/8	3/8	3/8	5/16	12.00	13.50	18.00	20.00	3/8	3/8	3/8	5/16	12.80	14.30	19.00	21.00
1/2	1/2	1/2	3/8	10.50	11.60	14.00	15.60	1/2	1/2	1/2	3/8	11.00	12.10	14.70	16.30
5/8	5/8	5/8	7/16	10.00	10.90	13.00	14.30	5/8	5/8	5/8	7/16	10.50	11.40	13.70	15.00
3/4	3/4	3/4	1/2	9.00	9.70	11.20	12.20	3/4	3/4	3/4	1/2	9.30	10.00	11.50	12.50
7/8	7/8	7/8	9/16	9.00	9.60	11.20	12.10	7/8	7/8	7/8	9/16	9.30	9.90	11.50	12.40
1 1/8	1 1/8	1 1/8	5/8	8.70	9.20	10.50	11.20	1 1/8	1 1/8	1 1/8	5/8	8.90	9.40	10.70	11.40
1 1/4	1 1/4	1 1/4	3/4	8.50	8.90	10.00	10.60	1 1/4	1 1/4	1 1/4	3/4	8.60	9.00	10.20	10.80
1 1/2	1 1/2	1 1/2	7/8	8.40	8.80	9.90	10.50	1 1/2	1 1/2	1 1/2	7/8	8.60	9.00	10.20	10.80
1 3/4	1 3/4	1 3/4	1	8.40	8.80	9.90	10.50	1 3/4	1 3/4	1 3/4	1	8.60	9.00	10.20	10.80
2	2	2	1 1/8	8.40	8.80	9.90	10.50	2	2	2	1 1/8	8.60	9.00	10.20	10.80
2 1/8	2 1/8	2 1/8	1 1/4	8.40	8.80	9.90	10.50	2 1/8	2 1/8	2 1/8	1 1/4	8.80	9.20	10.50	11.10
2 1/4	2 1/4	2 1/4	1 1/2	8.50	9.00	10.00	10.70	2 1/4	2 1/4	2 1/4	1 1/2	8.80	9.30	10.50	11.20
2 3/8	2 3/8	2 3/8	1 3/4	8.80	9.40	10.30	11.10	2 3/8	2 3/8	2 3/8	1 3/4	9.60	10.20	11.30	12.10
2 1/2	2 1/2	2 1/2	2	9.00	9.70	10.50	11.40	2 1/2	2 1/2	2 1/2	2	9.60	10.30	11.30	12.20
2 3/4	2 3/4	2 3/4	2 1/8	9.30	10.00	10.80	11.70	2 3/4	2 3/4	2 3/4	2 1/8	10.20	10.90	12.10	13.00
2 7/8	2 7/8	2 7/8	2 1/4	9.50	10.30	11.00	12.00	2 7/8	2 7/8	2 7/8	2 1/4	10.20	11.00	12.10	13.10
3	3	3	2 1/2	9.70	10.60	11.20	12.30	3	3	3	2 1/2	10.60	11.50	12.60	13.70
3 1/8	3 1/8	3 1/8	2 3/4	10.00	11.00	11.70	12.90	3 1/8	3 1/8	3 1/8	2 3/4	11.00	12.00	13.00	14.30
3 1/4	3 1/4	3 1/4	3	10.00	11.10	11.70	13.00	3 1/4	3 1/4	3 1/4	3	11.50	12.60	13.50	14.80
3 1/2	3 1/2	3 1/2	3 1/8	10.30	11.50	12.20	13.60								
3 3/8	3 3/8	3 3/8	3 1/4	10.50	11.80	12.40	13.90								
4 1/4	4 1/4	4 1/4	3 3/4	11.00	12.40	13.00	14.60								
4 5/8	4 5/8	4 5/8	4	11.50	13.00	13.50	15.20								

In ordering be sure and specify size of bolt.

Sizes not enumerated on above list will be charged extra at discretion of manufacturers.

FOR TABLE OF NUMBER OF NUTS TO KEY, SEE INDEX

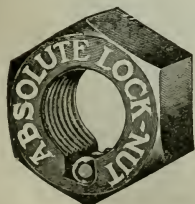
"ABSOLUTE" LOCK NUTS

Lock automatically, unlock with a nail. Locking device lies entirely within the nut. They require no extra bolt length. Easily removed and will not rust or bind. Very strong and are great time savers. Are being used with great success on crossings, switches, insulated joints and signal devices. For rail joints, car shop machinery and motors they are unusually efficient.

PRICES PER HUNDRED NUTS

U. S. Standard Thread

Size	Number Threads to Inch	Hot Pressed Square	Hot Pressed Hexagon	Semi-Finished Hexagon	C. T. & R. Square	C. T. & R. Hexagon	Milled Steel Hexagon
1/4	20	3.65	3.90	5.25	3.70	3.85	5.75
1/8	18	3.65	3.90	5.25	3.70	3.85	5.75
3/8	16	3.75	4.00	6.05	4.00	4.10	6.70
1/2	14	4.10	4.30	6.85	4.80	5.00	7.70
* 1/2	12 or 13	4.20	4.40	7.65	5.00	5.10	8.55
5/8	12	4.75	4.90	8.65	5.65	5.70	9.70
3/4	11	4.95	5.35	9.70	6.05	6.15	10.55
7/8	10	5.95	6.35	11.75	7.95	7.55	13.20
1	9	7.75	8.55	15.70	10.45	9.90	17.55
1 1/8	8	10.25	11.35	21.40	14.55	13.35	24.10



Write for discounts and prices on larger sizes.

Can also be furnished in A. L. A. M. and S. A. E. threads. Prices on application.

*In ordering 1/2 inch U. S. S. state whether 12 or 13 thread is desired.

NUTS

COLD-PUNCHED CHECK AND
JAM NUTS

Chamfered, Trimmed and Reamed

List Adopted May 1, 1911

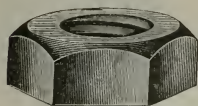


Fig. 352A

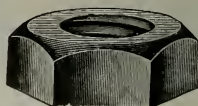


Fig. 352B

In ordering always give bolt size.

Width Inches	Thick- ness Inches	Hole Inches	Bolt Size Inches	Price per lb., 200 lb. Kegs		Width Inches	Thick- ness Inches	Hole Inches	Bolt Size Inches	Price per lb., 200 lb. Kegs	
				Blank	Tapped					Blank	Tapped
1/2	1/8	1/4	1/4	33.	37.5	1 5/8	7/8	3/4	1	13.	14.1
3/8	3/8	1/4	3/8	28.	32.5	1 1/2	5/8	1/2	1 1/8	13.	14.1
1/2	1/2	1/4	1/2	24.	27.	1 1/4	3/4	1/4	1 1/4	13.	14.1
5/8	5/8	1/2	5/8	20.	22.5	1 3/4	1 1/8	1/2	1 3/4	14.	15.3
3/4	3/4	1/2	3/4	17.	18.5	2 1/8	1 1/2	1 1/2	2 1/8	14.5	16.
1 1/8	1 1/8	3/4	1 1/8	15.	16.3	2 3/8	1 3/8	1 3/4	2 3/8	15.	16.7
1 1/4	1 1/4	7/8	1 1/4	13.5	14.6	2 1/2	1 1/4	1 3/4	2 1/2	16.	17.7
1 1/2	1 1/2	1	1 1/2	13.	14.1	3 1/8	1 1/2	2	3 1/8	16.	18.
										16.	18.1

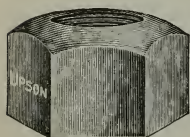
SEMI-FINISHED AND FINISHED CASE-HARDENED
HEXAGON NUTS

Manufacturers' Standard List

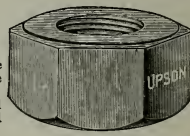
In Effect May 5, 1911

The thread and outside of each Finished Nut are made to an accurate gauge and to the standard adopted by the U. S. Government. First class in all respects.

The Semi-Finished Nuts correspond with the Finished Nuts in all dimensions; they are U. S. Standard Nuts, tapped and faced true on bottom.

Fig. 352C
Finished

In ordering always give bolt size.

Fig. 352D
Semi-Finished

Width Inches	Thickness Inches	Bolt Size Inches	Number of Threads per inch	Semi-Finished Hexagon Nuts		Finished and Case Hardened Hexagon Nuts	
				Regular Price each	Double Chamfer, Price each	Regular Price each	Double Chamfer, Price each
1/2	1/4	1/4	20	\$0.02	\$0.02 1/2	\$0.06	\$0.06 1/2
3/8	3/8	3/8	18	.02 1/2	.02 3/4	.07	.07 1/2
1/2	1/2	1/2	16	.03 1/4	.04	.08	.08 3/4
5/8	5/8	5/8	14	.03 3/4	.04 3/4	.09	.10
3/4	3/4	3/4	13 or 12	.04 1/2	.05 1/2	.10	.11
1 1/8	1 1/8	1 1/8	12	.05 1/2	.06 1/2	.12	.13
1 1/4	1 1/4	1 1/4	11	.06 1/2	.07 1/2	.16	.17 1/2
1 1/2	1 1/2	1 1/2	10	.08 1/2	.10 1/2	.22	.24
1 5/8	1 5/8	1 5/8	9	.12	.14 1/2	.27	.29 1/2
1 3/4	1 3/4	1 3/4	8	.17 1/2	.21	.38	.41 1/2
2	2	2	7	.24	.28 1/2	.50	.54 1/2
2 1/8	2 1/8	2 1/8	7	.33	.39	.66	.72
2 1/4	2 1/4	2 1/4	6	.49	.57	.90	.97
2 3/8	2 3/8	2 3/8	6	.69	.78	1.20	1.30
2 1/2	2 1/2	2 1/2	5 1/2	.93	1.05	1.45	1.58
2 3/4	2 3/4	2 3/4	5	1.30	1.45	1.75	1.90
2 7/8	2 7/8	2 7/8	5	1.70	1.90	2.50	2.70
3 1/8	3 1/8	3 1/8	4 1/2	2.15	2.40	3.25	3.50
3 1/2	3 1/2	3 1/2	4 1/2	3.10	3.45	5.50	6.00
3 3/4	3 3/4	3 3/4	4	4.75	5.25	8.50	9.50
4 1/4	4 1/4	4 1/4	4	6.30	6.95	12.00	13.50
4 5/8	4 5/8	4 5/8	3 1/2	9.90	11.00	18.00	20.00

For nuts thinner or smaller than standard, use regular list.

For semi-finished nuts, case hardened, add 20 per cent. to the list and use double chamfered list if rounded on top.

For finished nuts not case hardened use regular list.

For nuts polished after case hardened add 30 percent to the list.

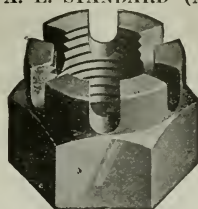
When ordering 1/2 inch nuts please state whether they are to have 12 or 13 threads per inch.

Square, semi-finished nuts take same list and discount as hexagon.

FOR WRENCHES TO FIT ABOVE NUTS, SEE INDEX

CASTELLATED NUTS

A. L. A. M. AND S. A. E. STANDARD (Milled from the Bar)



Size Bolt	Thread	Outside Diameter	Height	Depth of Slot	Price
$\frac{1}{4}$	28	S. A. E. $\frac{1}{16}$ A. L. A. M. $\frac{3}{8}$	$\frac{3}{32}$	$\frac{3}{32}$	See Foot Note
$\frac{3}{16}$	24	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{32}$	
$\frac{7}{16}$	24	$\frac{9}{16}$	$\frac{3}{32}$	$\frac{1}{8}$	
$\frac{1}{2}$	20	S. A. E. $\frac{5}{8}$ A. L. A. M. $1\frac{1}{16}$	$\frac{23}{64}$	$\frac{1}{8}$	
$\frac{1}{2}$	20	$\frac{3}{4}$	$\frac{9}{16}$	$\frac{7}{16}$	
$\frac{5}{8}$	18	$\frac{7}{8}$	$\frac{23}{64}$	$\frac{7}{16}$	
$\frac{5}{8}$	18	$1\frac{1}{8}$	$\frac{43}{64}$	$\frac{1}{4}$	
$1\frac{1}{8}$	16	1	$\frac{23}{64}$	$\frac{1}{4}$	
$\frac{3}{4}$	16	S. A. E. $1\frac{1}{16}$ A. L. A. M. $1\frac{1}{8}$	$\frac{13}{16}$	$\frac{1}{4}$	
$\frac{7}{8}$	14	$1\frac{1}{4}$	$\frac{23}{32}$	$\frac{1}{4}$	
1	14	$1\frac{7}{8}$	1	$\frac{1}{4}$	

Prices based on quantities. Furnished in packages or bulk. Specify whether Soft or Case Hardened. Quotations on request.

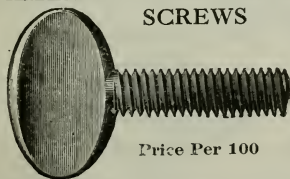
SEMI-FINISHED CASTELLATED NUTS

Furnished from Stock

Size Bolt	Thread	Outside Diameter	Height	Depth of Slot	Price
$\frac{1}{4}$	20	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{32}$	See Foot Note
$\frac{3}{16}$	18	$\frac{3}{8}$	$\frac{5}{16}$	$\frac{3}{32}$	
$\frac{7}{16}$	16	$\frac{1}{2}$	$\frac{7}{16}$	$\frac{1}{8}$	
$\frac{1}{2}$	14	$\frac{3}{4}$	$\frac{7}{16}$	$\frac{1}{8}$	
$\frac{1}{2}$	13 or 12	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{7}{16}$	
$\frac{9}{16}$	12	$\frac{3}{4}$	$\frac{9}{16}$	$\frac{7}{16}$	
$\frac{5}{8}$	11	$1\frac{1}{8}$	$\frac{5}{8}$	$\frac{1}{4}$	
$\frac{1}{2}$	11	$1\frac{3}{8}$	$\frac{11}{16}$	$\frac{1}{4}$	
$\frac{3}{4}$	10	$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{4}$	
$\frac{7}{8}$	9	$1\frac{7}{8}$	$\frac{7}{8}$	$\frac{1}{4}$	
1	8	$1\frac{5}{8}$	1	$\frac{1}{4}$	

Quotations on request. Furnished in packages or bulk. Specify whether Soft or Case Hardened.

MALLEABLE IRON THUMB SCREWS

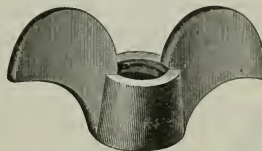


Price Per 100

Diameter	$\frac{1}{4}$	$\frac{3}{16}$	$\frac{1}{2}$	$\frac{5}{16}$	$\frac{3}{4}$	$\frac{7}{16}$	$\frac{1}{2}$
Threads per inch	40	24	20	18	16	14	12 or 13
Length under Head	$\frac{1}{4}$	2.10	1.20	1.50	2.00	2.70	....
$\frac{3}{4}$	2.60	1.45	1.80	2.35	3.00	....	....
1	3.10	1.70	2.10	2.70	3.40	4.60	5.80
$1\frac{1}{4}$	...	1.95	2.40	3.05	3.80	5.20	6.50
$1\frac{1}{2}$	...	2.20	2.70	3.40	4.20	5.80	7.20
2	...	2.50	3.30	4.10	5.00	7.00	8.60
$2\frac{1}{2}$	...	...	4.30	5.20	6.20	8.60	10.40
3	...	...	5.30	6.30	7.40	10.20	12.20

WING NUTS

Price Per 100



Diameter	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{4}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{3}{4}$
Per 100, threaded	2.40	1.10	1.30	1.60	2.15	2.75	3.70	6.00
Threads, per inch	40	24	20	18	16	14	12 or 13	11

FOR SPRING COTTERS, KEYS AND TAPER PINS, SEE INDEX

BRIDGE AND ROOF RODS—WASHERS



Fig. 1500

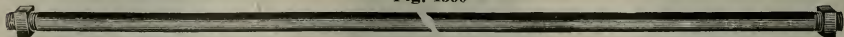


Fig. 1500A

Furnished to Order Only

With plain and upset ends, fitted with square or hexagon nuts as preferred. Also furnished with turnbuckles.

DIMENSIONS OF UPSET ENDS ON ROUND IRON

Diameter of Bar	Diameter of Upset	Length of Upset	Threads per inch	Diameter of Bar	Diameter of Upset	Length of Upset	Threads per inch
$\frac{3}{8}$	1	3	8	$1\frac{3}{4}$	$2\frac{1}{8}$	5	$4\frac{1}{2}$
$\frac{7}{8}$	$1\frac{1}{8}$	$4\frac{1}{2}$	7	$1\frac{7}{8}$	$2\frac{1}{4}$	$5\frac{3}{4}$	$4\frac{1}{2}$
1	$1\frac{1}{4}$	5	7	2	$2\frac{3}{8}$	6	4
$1\frac{1}{8}$	$1\frac{3}{8}$	5	6	$2\frac{1}{8}$	$2\frac{1}{2}$	$6\frac{1}{2}$	4
$1\frac{1}{4}$	$1\frac{3}{2}$	5	6	$2\frac{3}{4}$	$2\frac{5}{8}$	$6\frac{3}{4}$	4
$1\frac{3}{8}$	$1\frac{7}{8}$	5	5	$2\frac{7}{8}$	$2\frac{3}{4}$	7	$3\frac{1}{2}$
$1\frac{1}{2}$	$1\frac{7}{8}$	5	5	$2\frac{1}{2}$	$2\frac{3}{8}$	$7\frac{1}{2}$	$3\frac{1}{2}$
$1\frac{3}{4}$	2	5	$4\frac{1}{2}$	$2\frac{5}{8}$	3	8	$3\frac{1}{2}$

Prices quoted on receipt of specifications.

WASHERS



Fig. 620A. Bevel

Cup, angle and bevel cast iron washers furnished to order only on receipt of specifications.

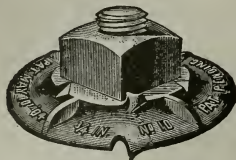


Fig. 620D. Malleable

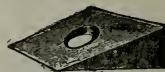


Fig. 620C. Angle

Cup, angle and bevel cast iron washers furnished to order only on receipt of specifications.

Fig. 620D MALLEABLE WASHERS

Size of Bolt Hole inches	Diameter, inches		Thickness, inches		Comparative Weight, Pounds per 100 Washers			
	Western Pattern No. 10	Eastern Pattern No. 44	Western Pattern No. 10	Eastern Pattern No. 44	Western Pattern No. 10		Eastern Pattern No. 44	
					Malleable Iron	Cast Iron	Malleable Iron	Cast Iron
$\frac{1}{2}$	$2\frac{1}{8}$	2	$\frac{3}{4}$	$\frac{1}{4}$	15	45	7	21
$\frac{5}{8}$	$2\frac{3}{8}$	$2\frac{1}{2}$	$\frac{7}{8}$	$\frac{1}{2}$	22	66	15	43
$\frac{3}{4}$	3	3	$\frac{1}{2}$	$\frac{3}{8}$	33	100	23	70
$\frac{7}{8}$	$3\frac{1}{2}$	$3\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{8}$	50	150	38	113
1	4	4	$\frac{1}{2}$	$\frac{1}{2}$	68	200	58	175
$1\frac{1}{8}$	$4\frac{1}{2}$	$4\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	87	262	85	256
$1\frac{1}{4}$	5	5	$\frac{5}{8}$	$\frac{1}{2}$	150	450	111	332
$1\frac{3}{8}$	...	$5\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{2}$	...	...	152	455
$1\frac{1}{2}$	6	6	$\frac{3}{4}$	$\frac{3}{4}$	190	575	203	610
$1\frac{3}{4}$	6	7	$\frac{3}{4}$	$\frac{3}{4}$	206	618	288	865
2	$7\frac{1}{8}$	$7\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	420	1262	372	1115

The Western Pattern No. 10 is the engineers' standard west of Alleghenies. The Eastern Pattern No. 44 is the engineers' standard east of Alleghenies.

Prices quoted on receipt of specifications.

MALLEABLE IRON CLINCH RINGS

BLACK AND GALVANIZED

Countersunk Hole. 200-lb. Kegs

Size $\frac{1}{2}$ inch.....	per lb. \$....
Size $\frac{3}{8}$ inch.....	"
Size $\frac{5}{8}$ inch.....	"
Size $\frac{3}{4}$ inch.....	"
Size $\frac{7}{8}$ inch.....	"
Size 1 inch.....	"
Size $1\frac{1}{8}$ inch.....	"
Size $1\frac{1}{4}$ inch.....	"
Size $1\frac{1}{2}$ inch.....	"
Size $1\frac{3}{4}$ inch.....	"
Size $1\frac{7}{8}$ inch.....	"
Size 2 inch.....	"



Fig. 1200

Prices on application.

CAST WASHERS



Fig. 1201

Prices quoted on receipt of specifications.

Size of Bolt inches	Hole inches	Diameter inches	Thickness inches	Weight Approximate lbs
$\frac{1}{2}$	$\frac{5}{8}$	$2\frac{5}{8}$	$\frac{3}{4}$	$\frac{1}{2}$
$\frac{5}{8}$	$\frac{3}{4}$	$2\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{2}$
$\frac{3}{4}$	$\frac{7}{8}$	$3\frac{1}{4}$	$\frac{7}{8}$	$1\frac{1}{2}$
$\frac{7}{8}$	1	$3\frac{1}{2}$	1	$1\frac{1}{2}$
1	$1\frac{1}{8}$	$4\frac{1}{8}$	$1\frac{1}{8}$	$2\frac{1}{2}$
$1\frac{1}{8}$	$1\frac{1}{4}$	$4\frac{1}{2}$	$1\frac{1}{8}$	$3\frac{1}{4}$
$1\frac{1}{4}$	$1\frac{3}{8}$	$5\frac{1}{2}$	$1\frac{1}{8}$	$4\frac{1}{2}$
$1\frac{1}{2}$	$1\frac{3}{4}$	6	$1\frac{1}{8}$	5

Special sizes made to order.

MACHINE SCREW NUTS, AND LOCK WASHERS

CELLAR BOX COTTERS

List in effect July 21, 1911. Superseding all previous lists.

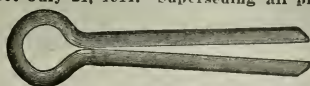
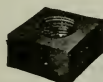


Fig 599

Cellar Box Cotter are shipped in bulk, kegs or boxes

Size Inches	Price per 1000	Quantity in Package	Approx. wt. per 1000 in lbs.	Size Inches	Price per 1000	Quantity in Package	Approx. wt. per 1000 in lbs.	Size Inches	Price per 1000	Quantity in Package	Approx. wt. per 1000 in lbs.
$\frac{3}{8}$ x 7	\$ 412.00	Bulk	199	$\frac{1}{2}$ x 9	\$ 958.00	Bulk	500	$\frac{5}{8}$ x 11	\$1440.00	Bulk	857
$\frac{3}{8}$ x 8	454.00	Bulk	225	$\frac{1}{2}$ x 10	1039.00	Bulk	550	$\frac{5}{8}$ x 12	1560.00	Bulk	1035
$\frac{3}{8}$ x 9	496.00	Bulk	250	$\frac{1}{2}$ x 11	1120.00	Bulk	600	$\frac{5}{8}$ x 13	1850.00	Bulk	1113
$\frac{3}{8}$ x 10	538.00	Bulk	275	$\frac{1}{2}$ x 12	1201.00	Bulk	650	$\frac{5}{8}$ x 14	1800.00	Bulk	1192
$\frac{3}{8}$ x 11	580.00	Bulk	301	$\frac{1}{2}$ x 13	1282.00	Bulk	700	$\frac{5}{8}$ x 15	1920.00	Bulk	1270
$\frac{3}{8}$ x 12	622.00	Bulk	326	$\frac{1}{2}$ x 14	1363.00	Bulk	750	$\frac{5}{8}$ x 16	2040.00	Bulk	1348
$\frac{3}{8}$ x 13	664.00	Bulk	351	$\frac{1}{2}$ x 15	1444.00	Bulk	800	$\frac{5}{8}$ x 17	2160.00	Bulk	1427
$\frac{3}{8}$ x 14	706.00	Bulk	376	$\frac{1}{2}$ x 16	1525.00	Bulk	850	$\frac{5}{8}$ x 18	2280.00	Bulk	1505
$\frac{3}{8}$ x 15	748.00	Bulk	402	$\frac{1}{2}$ x 17	1606.00	Bulk	900				
$\frac{3}{8}$ x 16	790.00	Bulk	427	$\frac{1}{2}$ x 18	1687.00	Bulk	950	$\frac{3}{4}$ x 2 $\frac{1}{2}$	774.00	Bulk	395
$\frac{3}{8}$ x 17	832.00	Bulk	452					$\frac{3}{4}$ x 2 $\frac{3}{4}$	816.00	Bulk	425
$\frac{3}{8}$ x 18	876.00	Bulk	478	$\frac{3}{4}$ x 7	852.00	Bulk	494	$\frac{3}{4}$ x 3	900.00	Bulk	481
				$\frac{3}{4}$ x 8	948.00	Bulk	555	$\frac{3}{4}$ x 4	1068.00	Bulk	590
$\frac{1}{2}$ x 7	628.00	Bulk	319	$\frac{3}{4}$ x 9	1044.00	Bulk	616	$\frac{3}{4}$ x 5	1236.00	Bulk	699
$\frac{1}{2}$ x 8	689.00	Bulk	359	$\frac{3}{4}$ x 10	1140.00	Bulk	677	$\frac{3}{4}$ x 6	1404.00	Bulk	808
$\frac{1}{2}$ x 9	750.00	Bulk	399	$\frac{3}{4}$ x 11	1236.00	Bulk	738	$\frac{3}{4}$ x 7	1572.00	Bulk	918
$\frac{1}{2}$ x 10	811.00	Bulk	439	$\frac{3}{4}$ x 12	1332.00	Bulk	799	$\frac{3}{4}$ x 8	1740.00	Bulk	1027
$\frac{1}{2}$ x 11	872.00	Bulk	480	$\frac{3}{4}$ x 13	1428.00	Bulk	860	$\frac{3}{4}$ x 9	1908.00	Bulk	1136
$\frac{1}{2}$ x 12	933.00	Bulk	520	$\frac{3}{4}$ x 14	1524.00	Bulk	921	$\frac{3}{4}$ x 10	2076.00	Bulk	1245
$\frac{1}{2}$ x 13	994.00	Bulk	560	$\frac{3}{4}$ x 15	1620.00	Bulk	981	$\frac{3}{4}$ x 11	2244.00	Bulk	1355
$\frac{1}{2}$ x 14	1055.00	Bulk	600	$\frac{3}{4}$ x 16	1716.00	Bulk	1042	$\frac{3}{4}$ x 12	2412.00	Bulk	1464
$\frac{1}{2}$ x 15	1116.00	Bulk	640	$\frac{3}{4}$ x 17	1812.00	Bulk	1103	$\frac{3}{4}$ x 13	2580.00	Bulk	1573
$\frac{1}{2}$ x 16	1177.00	Bulk	680	$\frac{3}{4}$ x 18	1908.00	Bulk	1164	$\frac{3}{4}$ x 14	2748.00	Bulk	1682
$\frac{1}{2}$ x 17	1238.00	Bulk	721					$\frac{3}{4}$ x 15	2916.00	Bulk	1791
$\frac{1}{2}$ x 18	1299.00	Bulk	761	$\frac{5}{8}$ x 7	960.00	Bulk	643	$\frac{3}{4}$ x 16	3084.00	Bulk	1900
				$\frac{5}{8}$ x 8	1080.00	Bulk	722	$\frac{3}{4}$ x 17	3252.00	Bulk	2000
$\frac{1}{2}$ x 7	796.00	Bulk	400	$\frac{5}{8}$ x 9	1200.00	Bulk	800	$\frac{3}{4}$ x 18	3420.00	Bulk	2118
$\frac{1}{2}$ x 8	877.00	Bulk	450	$\frac{5}{8}$ x 10	1320.00	Bulk	878				

SQUARE MACHINE SCREW NUTS



IRON

Threads	36	32	32	24	32	24	20	18	18	16	18	16	14
No.	4	6	8	10	12	14	16	18	20	20	30		
List, per 100...	1.16	1.16	1.18	.20	.22	.25	.33	.43	.57	1.73	1.05		

HEXAGON MACHINE SCREW NUTS



IRON

Threads	36	32	32	24	32	24	20	18	18	16	18	16	14
No.	4	6	8	10	12	14	16	18	20	24	30		
List, per 100...	1.25	.25	.28	.30	.33	.38	.50	.65	.85	1.10	1.60		



LOCK NUTS OR LOCK WASHERS



S. A. E. FLAT

For Bolt	Size of Washer	Price per M
$\frac{1}{4}$	$\frac{3}{8}$ x $\frac{1}{2}$	\$4.35
$\frac{1}{8}$	$\frac{1}{4}$ x $\frac{1}{2}$	6.70
$\frac{3}{8}$	$\frac{3}{8}$ x $\frac{1}{2}$	7.35
$\frac{1}{2}$	$\frac{1}{2}$ x $\frac{1}{2}$	10.70
$\frac{3}{4}$	$\frac{3}{4}$ x $\frac{1}{2}$	11.35
$\frac{5}{8}$	$\frac{1}{2}$ x $\frac{3}{4}$	16.00
$\frac{3}{4}$	$\frac{3}{4}$ x $\frac{3}{4}$	21.70
$\frac{7}{8}$	$\frac{1}{4}$ x $\frac{3}{4}$	24.70
1	$\frac{1}{4}$ x $\frac{3}{4}$	35.00

S. A. E. SQUARE

For Bolt	Size of Washer	Price per M
$\frac{1}{4}$	$\frac{3}{8}$ x $\frac{1}{2}$	\$ 4.70
$\frac{1}{8}$	$\frac{1}{4}$ x $\frac{1}{2}$	7.35
$\frac{3}{8}$	$\frac{3}{8}$ x $\frac{1}{2}$	8.00
$\frac{1}{2}$	$\frac{1}{2}$ x $\frac{1}{2}$	12.70
$\frac{3}{4}$	$\frac{3}{4}$ x $\frac{1}{2}$	13.35
$\frac{5}{8}$	$\frac{1}{2}$ x $\frac{3}{4}$	18.00
$\frac{3}{4}$	$\frac{3}{4}$ x $\frac{3}{4}$	24.35
1	$\frac{1}{4}$ x $\frac{3}{4}$	28.70
$\frac{1}{4}$	$\frac{1}{4}$ x $\frac{3}{4}$	40.00
$\frac{1}{2}$	$\frac{1}{4}$ x $\frac{3}{4}$	43.70
$\frac{1}{4}$	$\frac{1}{4}$ x $\frac{3}{4}$	75.70

SPRING COTTERS

Cellar Box Cotters listed on page 725

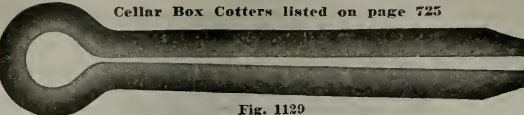


Fig. 1129

All measurements made under the eye. List in effect July 21, 1911. Superseding all previous lists.
These Spring Cotters will run at least 10 per cent better than any others on account of superior heading and pointing and the fact that they are hand inspected and all culis, dirt and imperfect cotters thrown out.

Wire Gauge Size	Size	Price per 1000	Quantity in Package	Approx. Weight per 1000	Wire Gauge Size	Size	Price per 1000	Quantity in Package	Approx. Weight per 1000	Wire Gauge Size	Size	Price per 1000	Quantity in Package	Approx. Weight per 1000
No. 16					No. 10					No. 4				
$\frac{1}{16} \times \frac{1}{8}$	$\frac{1}{16} \times \frac{1}{8}$	\$3.50	1,000	9	$\frac{1}{10} \times \frac{1}{8}$	$\frac{1}{10} \times \frac{1}{8}$	\$6.00	1,000	3 10	$\frac{1}{4} \times 1$	$\frac{1}{4} \times 1$	\$20.00	500	17 13
$\frac{1}{16} \times \frac{7}{16}$	$\frac{1}{16} \times \frac{7}{16}$	3.50	1,000	11	$\frac{1}{10} \times \frac{1}{4}$	$\frac{1}{10} \times \frac{1}{4}$	7.00	1,000	4 10	$\frac{1}{4} \times 1 \frac{1}{2}$	$\frac{1}{4} \times 1 \frac{1}{2}$	23.50	500	20 8
$\frac{1}{16} \times \frac{1}{2}$	$\frac{1}{16} \times \frac{1}{2}$	3.50	1,000	12	$\frac{1}{10} \times \frac{3}{8}$	$\frac{1}{10} \times \frac{3}{8}$	8.00	1,000	5 10	$\frac{1}{4} \times 1 \frac{3}{4}$	$\frac{1}{4} \times 1 \frac{3}{4}$	27.00	500	23 0
$\frac{1}{16} \times \frac{9}{16}$	$\frac{1}{16} \times \frac{9}{16}$	3.50	1,000	13	$\frac{1}{10} \times 1$	$\frac{1}{10} \times 1$	9.00	1,000	6 4	$\frac{1}{4} \times 2$	$\frac{1}{4} \times 2$	30.50	500	26 8
$\frac{1}{16} \times \frac{5}{8}$	$\frac{1}{16} \times \frac{5}{8}$	4.15	1,000	13	$\frac{1}{10} \times 1 \frac{1}{2}$	$\frac{1}{10} \times 1 \frac{1}{2}$	10.00	1,000	6 12	$\frac{1}{4} \times 2 \frac{1}{4}$	$\frac{1}{4} \times 2 \frac{1}{4}$	34.00	250	29 0
$\frac{1}{16} \times \frac{3}{4}$	$\frac{1}{16} \times \frac{3}{4}$	4.15	1,000	14	$\frac{1}{10} \times 2$	$\frac{1}{10} \times 2$	11.00	1,000	8 10	$\frac{1}{4} \times 2 \frac{3}{4}$	$\frac{1}{4} \times 2 \frac{3}{4}$	37.50	250	32 8
$\frac{1}{16} \times \frac{7}{8}$	$\frac{1}{16} \times \frac{7}{8}$	4.15	1,000	14	$\frac{1}{10} \times 2 \frac{1}{2}$	$\frac{1}{10} \times 2 \frac{1}{2}$	12.00	500	10 0	$\frac{1}{4} \times 3$	$\frac{1}{4} \times 3$	41.00	250	35 0
$\frac{1}{16} \times 1$	$\frac{1}{16} \times 1$	4.80	1,000	1 0	$\frac{1}{10} \times 2 \frac{3}{4}$	$\frac{1}{10} \times 2 \frac{3}{4}$	13.00	500	10 10	$\frac{1}{4} \times 3 \frac{1}{2}$	$\frac{1}{4} \times 3 \frac{1}{2}$	44.50	250	36 4
$\frac{1}{16} \times 1 \frac{1}{8}$	$\frac{1}{16} \times 1 \frac{1}{8}$	4.80	1,000	1 1	$\frac{1}{10} \times 3$	$\frac{1}{10} \times 3$	14.00	500	12 0	$\frac{1}{4} \times 3 \frac{3}{4}$	$\frac{1}{4} \times 3 \frac{3}{4}$	48.00	250	40 2
$\frac{1}{16} \times 1 \frac{1}{4}$	$\frac{1}{16} \times 1 \frac{1}{4}$	5.45	1,000	1 2						$\frac{1}{4} \times 4$	$\frac{1}{4} \times 4$	51.50	250	43 1
$\frac{1}{16} \times 1 \frac{1}{2}$	$\frac{1}{16} \times 1 \frac{1}{2}$	6.10	1,000	1 4						$\frac{1}{4} \times 4 \frac{1}{2}$	$\frac{1}{4} \times 4 \frac{1}{2}$	55.00	250	46 0
$\frac{1}{16} \times 1 \frac{3}{4}$	$\frac{1}{16} \times 1 \frac{3}{4}$	6.10	1,000	1 5						$\frac{1}{4} \times 4 \frac{3}{4}$	$\frac{1}{4} \times 4 \frac{3}{4}$	58.50	250	48 15
$\frac{1}{16} \times 2$	$\frac{1}{16} \times 2$	6.75	1,000	1 9						$\frac{1}{4} \times 5$	$\frac{1}{4} \times 5$	62.00	150	51 13
$\frac{1}{16} \times 2 \frac{1}{4}$	$\frac{1}{16} \times 2 \frac{1}{4}$	7.40	1,000	2 0										
$\frac{1}{16} \times 2 \frac{1}{2}$	$\frac{1}{16} \times 2 \frac{1}{2}$	8.05	1,000	2 5										
$\frac{1}{16} \times 2 \frac{3}{4}$	$\frac{1}{16} \times 2 \frac{3}{4}$	8.70	1,000	2 10										
$\frac{1}{16} \times 3$	$\frac{1}{16} \times 3$	9.35	500	3 6										
$\frac{1}{16} \times 3 \frac{1}{2}$	$\frac{1}{16} \times 3 \frac{1}{2}$	10.00	500	3 8										
$\frac{1}{16} \times 3 \frac{3}{4}$	$\frac{1}{16} \times 3 \frac{3}{4}$	10.65	500	3 9 1/2										
$\frac{1}{16} \times 4$	$\frac{1}{16} \times 4$	11.30	500	3 11										
No. 14 1/2														
$\frac{1}{8} \times \frac{1}{8}$	$\frac{1}{8} \times \frac{1}{8}$	3.50	1,000	13	$\frac{1}{8} \times \frac{1}{4}$	$\frac{1}{8} \times \frac{1}{4}$	8.00	1,000	5 8	$\frac{3}{8} \times 1$	$\frac{3}{8} \times 1$	72.00	Bulk	60
$\frac{1}{8} \times \frac{1}{2}$	$\frac{1}{8} \times \frac{1}{2}$	3.50	1,000	14	$\frac{1}{8} \times \frac{3}{4}$	$\frac{1}{8} \times \frac{3}{4}$	9.30	1,000	6 11	$\frac{3}{8} \times 1 \frac{1}{2}$	$\frac{3}{8} \times 1 \frac{1}{2}$	79.20	"	66
$\frac{1}{8} \times \frac{1}{2}$	$\frac{1}{8} \times \frac{1}{2}$	3.50	1,000	1 0	$\frac{1}{8} \times 1$	$\frac{1}{8} \times 1$	10.60	1,000	8 1	$\frac{3}{8} \times 1 \frac{3}{4}$	$\frac{3}{8} \times 1 \frac{3}{4}$	86.40	"	70
$\frac{1}{8} \times \frac{1}{2}$	$\frac{1}{8} \times \frac{1}{2}$	4.15	1,000	1 2	$\frac{1}{8} \times 1 \frac{1}{2}$	$\frac{1}{8} \times 1 \frac{1}{2}$	11.90	1,000	9 7	$\frac{3}{8} \times 2$	$\frac{3}{8} \times 2$	93.60	"	78
$\frac{1}{8} \times \frac{1}{2}$	$\frac{1}{8} \times \frac{1}{2}$	4.15	1,000	1 3	$\frac{1}{8} \times 1 \frac{3}{4}$	$\frac{1}{8} \times 1 \frac{3}{4}$	13.20	1,000	11 1	$\frac{3}{8} \times 2 \frac{1}{4}$	$\frac{3}{8} \times 2 \frac{1}{4}$	100.80	"	84
$\frac{1}{8} \times \frac{1}{2}$	$\frac{1}{8} \times \frac{1}{2}$	4.15	1,000	1 5	$\frac{1}{8} \times 2$	$\frac{1}{8} \times 2$	14.50	1,000	12 3	$\frac{3}{8} \times 2 \frac{3}{4}$	$\frac{3}{8} \times 2 \frac{3}{4}$	108.00	"	91
$\frac{1}{8} \times \frac{1}{2}$	$\frac{1}{8} \times \frac{1}{2}$	4.80	1,000	1 9	$\frac{1}{8} \times 2 \frac{1}{2}$	$\frac{1}{8} \times 2 \frac{1}{2}$	15.80	500	14 0	$\frac{3}{8} \times 3$	$\frac{3}{8} \times 3$	115.20	"	95
$\frac{1}{8} \times \frac{1}{2}$	$\frac{1}{8} \times \frac{1}{2}$	5.45	1,000	1 11	$\frac{1}{8} \times 2 \frac{3}{4}$	$\frac{1}{8} \times 2 \frac{3}{4}$	17.10	500	15 6	$\frac{3}{8} \times 3 \frac{1}{2}$	$\frac{3}{8} \times 3 \frac{1}{2}$	122.40	"	103
$\frac{1}{8} \times 1$	$\frac{1}{8} \times 1$	5.45	1,000	2 2	$\frac{1}{8} \times 3$	$\frac{1}{8} \times 3$	18.40	500	15 12	$\frac{3}{8} \times 3 \frac{3}{4}$	$\frac{3}{8} \times 3 \frac{3}{4}$	129.60	"	109
$\frac{1}{8} \times 1 \frac{1}{8}$	$\frac{1}{8} \times 1 \frac{1}{8}$	6.10	1,000	2 8						$\frac{3}{8} \times 4$	$\frac{3}{8} \times 4$	136.80	"	116
$\frac{1}{8} \times 1 \frac{1}{4}$	$\frac{1}{8} \times 1 \frac{1}{4}$	6.75	1,000	2 14						$\frac{3}{8} \times 4 \frac{1}{2}$	$\frac{3}{8} \times 4 \frac{1}{2}$	144.00	"	123
$\frac{1}{8} \times 1 \frac{1}{2}$	$\frac{1}{8} \times 1 \frac{1}{2}$	7.40	1,000	3 4						$\frac{3}{8} \times 4 \frac{3}{4}$	$\frac{3}{8} \times 4 \frac{3}{4}$	151.20	"	130
$\frac{1}{8} \times 1 \frac{3}{4}$	$\frac{1}{8} \times 1 \frac{3}{4}$	8.05	1,000	3 10						$\frac{3}{8} \times 5$	$\frac{3}{8} \times 5$	158.40	"	138
$\frac{1}{8} \times 2$	$\frac{1}{8} \times 2$	8.70	1,000	4 0						$\frac{3}{8} \times 5 \frac{1}{2}$	$\frac{3}{8} \times 5 \frac{1}{2}$	165.60	"	148
$\frac{1}{8} \times 2 \frac{1}{2}$	$\frac{1}{8} \times 2 \frac{1}{2}$	10.00	1,000	4 8						$\frac{3}{8} \times 5 \frac{3}{4}$	$\frac{3}{8} \times 5 \frac{3}{4}$	172.80	"	159
$\frac{1}{8} \times 3$	$\frac{1}{8} \times 3$									$\frac{3}{8} \times 6$	$\frac{3}{8} \times 6$	180.00	"	169
No. 13														
$\frac{1}{4} \times \frac{1}{8}$	$\frac{1}{4} \times \frac{1}{8}$	3.50	1,000	1 7	$\frac{1}{2} \times \frac{1}{8}$	$\frac{1}{2} \times \frac{1}{8}$	11.10	1,000	8 0	$\frac{1}{2} \times 1$	$\frac{1}{2} \times 1$	108.00	"	108
$\frac{1}{4} \times \frac{1}{4}$	$\frac{1}{4} \times \frac{1}{4}$	4.15	1,000	1 10	$\frac{1}{2} \times \frac{1}{4}$	$\frac{1}{2} \times \frac{1}{4}$	12.80	1,000	9 5	$\frac{1}{2} \times 1 \frac{1}{2}$	$\frac{1}{2} \times 1 \frac{1}{2}$	119.50	"	118
$\frac{1}{4} \times \frac{1}{2}$	$\frac{1}{4} \times \frac{1}{2}$	4.15	1,000	2 0	$\frac{1}{2} \times \frac{3}{4}$	$\frac{1}{2} \times \frac{3}{4}$	14.50	1,000	10 10	$\frac{1}{2} \times 1 \frac{3}{4}$	$\frac{1}{2} \times 1 \frac{3}{4}$	131.00	"	128
$\frac{1}{4} \times \frac{3}{4}$	$\frac{1}{4} \times \frac{3}{4}$	4.80	1,000	2 3	$\frac{1}{2} \times 1$	$\frac{1}{2} \times 1$	16.20	1,000	13 8	$\frac{1}{2} \times 1 \frac{1}{2}$	$\frac{1}{2} \times 1 \frac{1}{2}$	142.50	"	138
$\frac{1}{4} \times 1$	$\frac{1}{4} \times 1$	5.45	1,000	2 5	$\frac{1}{2} \times 1 \frac{1}{2}$	$\frac{1}{2} \times 1 \frac{1}{2}$	17.90	500	14 4	$\frac{1}{2} \times 1 \frac{3}{4}$	$\frac{1}{2} \times 1 \frac{3}{4}$	154.00	"	148
$\frac{1}{4} \times 1 \frac{1}{8}$	$\frac{1}{4} \times 1 \frac{1}{8}$	6.10	1,000	2 12	$\frac{1}{2} \times 1 \frac{3}{4}$	$\frac{1}{2} \times 1 \frac{3}{4}$	19.60	500	16 8	$\frac{1}{2} \times 2$	$\frac{1}{2} \times 2$	165.50	"	159
$\frac{1}{4} \times 1 \frac{1}{4}$	$\frac{1}{4} \times 1 \frac{1}{4}$	6.75	1,000	3 9	$\frac{1}{2} \times 2$	$\frac{1}{2} \times 2$	21.30	500	17 10	$\frac{1}{2} \times 2 \frac{1}{4}$	$\frac{1}{2} \times 2 \frac{1}{4}$	177.00	"	169
$\frac{1}{4} \times 1 \frac{1}{2}$	$\frac{1}{4} \times 1 \frac{1}{2}$	7.40	1,000	4 1	$\frac{1}{2} \times 2 \frac{1}{2}$	$\frac{1}{2} \times 2 \frac{1}{2}$	23.00	500	20 0	$\frac{1}{2} \times 2 \frac{3}{4}$	$\frac{1}{2} \times 2 \frac{3}{4}$	188.50	"	180
$\frac{1}{4} \times 1 \frac{3}{4}$	$\frac{1}{4} \times 1 \frac{3}{4}$	8.05	1,000	4 8	$\frac{1}{2} \times 2 \frac{3}{4}$	$\frac{1}{2} \times 2 \frac{3}{4}$	24.70	500	21 2	$\frac{1}{2} \times 3$	$\frac{1}{2} \times 3$	200.00	"	189
$\frac{1}{4} \times 2$	$\frac{1}{4} \times 2$	8.50	1,000	4 10	$\frac{1}{2} \times 3$	$\frac{1}{2} \times 3$	26.40	250	22 14	$\frac{1}{2} \times 3 \frac{1}{2}$	$\frac{1}{2} \times 3 \frac{1}{2}$	211.50	"	198
No. 12														
$\frac{1}{2} \times \frac{1}{8}$	$\frac{1}{2} \times \frac{1}{8}$	4.00	1,000	2 1	$\frac{1}{2} \times \frac{1}{4}$	$\frac{1}{2} \times \frac{1}{4}$	12.00	1,000	10 0	$\frac{1}{2} \times 3 \frac{3}{4}$	$\frac{1}{2} \times 3 \frac{3}{4}$	223.00	"	213
$\frac{1}{2} \times \frac{1}{4}$	$\frac{1}{2} \times \frac{1}{4}$	4.75	1,000	2 12	$\frac{1}{2} \times \frac{3}{4}$	$\frac{1}{2} \times \frac{3}{4}$	14.00	1,000	12 0	$\frac{1}{2} \times 4$	$\frac{1}{2} \times 4$	238.50	"	225
$\frac{1}{2} \times \frac{1}{2}$	$\frac{1}{2} \times \frac{1}{2}$	5.50	1,000	3 5	$\frac{1}{2} \times 1$	$\frac{1}{2} \times 1$	16.00	1,000	12 14	$\frac{1}{2} \times 4 \frac{1}{2}$	$\frac{1}{2} \times 4 \frac{1}{2}$	253.50	"	238
$\frac{1}{2} \times \frac{3}{4}$	$\frac{1}{2} \times \frac{3}{4}$	6.25	1,000	4 0	$\frac{1}{2} \times 1 \frac{1}{2}$	$\frac{1}{2} \times 1 \frac{1}{2}$	18.00	1,000	15 10	$\frac{1}{2} \times 4 \frac{3}{4}$	$\frac{1}{2} \times 4 \frac{3}{4}$	268.50	"	250
$\frac{1}{2} \times 1$	$\frac{1}{2} \times 1$	7.00	1,000	4 12	$\frac{1}{2} \times 1 \frac{3}{4}$	$\frac{1}{2} \times 1 \frac{3}{4}$	20.00	500	20 0	$\frac{1}{2} \times 5$	$\frac{1}{2} \times 5$	283.50	"	300
$\frac{1}{2} \times 1 \frac{1}{8}$	$\frac{1}{2} \times 1 \frac{1}{8}$	7.75	1,000	5 1	$\frac{1}{2} \times 2$	$\frac{1}{2} \times 2$	22.00	500	20 8	$\frac{1}{2} \times 5 \frac{1}{2}$	$\frac{1}{2} \times 5 \frac{1}{2}$	298.50	"	315
$\frac{1}{2} \times 1 \frac{1}{4}$	$\frac{1}{2} \times 1 \frac{1}{4}$	8.50	1,000	6 2	$\frac{1}{2} \times 2 \frac{1}{2}$	$\frac{1}{2} \times 2 \frac{1}{2}$	24.00	500	22 10	$\frac{1}{2} \times 5 \frac{3}{4}$	$\frac{1}{2} \times 5 \frac{3}{4}$	313.50	"	330
No. 11														
$\frac{1}{2} \times \frac{1}{2}$	$\frac{1}{2} \times \frac{1}{2}$	\$5.00	1,000	2 12	$\frac{1}{2} \times 2 \frac{3}{4}$	$\frac{1}{2} \times 2 \frac{3}{4}$	26.00	250	24 11	$\frac{1}{2} \times 6$	$\frac{1}{2} \times 6$	328.50	"	345
$\frac{1}{2} \times 1$	$\frac{1}{2} \times 1$	5.85	1,000	3 10	$\frac{1}{2} \times 3$	$\frac{1}{2} \times 3$	28.00	250	26 13	$\frac{1}{2} \times 6 \frac{1}{2}$	$\frac{1}{2} \times 6 \frac{1}{2}$	343.50	"	360
$\frac{1}{2} \times 1 \frac{1}{8}$	$\frac{1}{2} \times 1 \frac{1}{8}$	6.70	1,000	4 0	$\frac{1}{2} \times 3 \frac{1}{2}$	$\frac{1}{2} \times 3 \frac{1}{2}$	30.00	250	28 14	$\frac{1}{2} \times 6 \frac{3}{4}$	$\frac{1}{2} \times 6 \frac{3}{4}$	358.50	"	375
$\frac{1}{2} \times 1 \frac{1}{4}$	$\frac{1}{2} \times 1 \frac{1}{4}$	7.55	1,000	4 14	$\frac{1}{2} \times 3 \frac{3}{4}$	$\frac{1}{2} \times 3 \frac{3}{4}$	32.00	250	30 16	$\frac{1}{2} \times 7$	$\frac{1}{2} \times 7$	373.50	"	390
$\frac{1}{2} \times 1 \frac{1}{2}$	$\frac{1}{2} \times 1 \frac{1}{2}$	8.40	1,000	5 9	$\frac{1}{2} \times 4$	$\frac{1}{2} \times 4$	34.00	250	32 18	$\frac{1}{2} \times 7 \frac{1}{2}$	$\frac{1}{2} \times 7 \frac{1}{2}$	388.50	"	405
$\frac{1}{2} \times 1 \frac{3}{4}$	$\frac{1}{2} \times 1 \frac{3}{4}$	9.25	1,000	6 0	$\frac{1}{2} \times 4 \frac{1}{2}$	$\frac{1}{2} \times 4 \frac{1}{2}$	36.00	250	34 20	$\frac{1}{2} \times 7 \frac{3}{4}$	$\frac{1}{2} \times 7 \frac{3}{4}$	403.50	"	420
$\frac{1}{2} \times 2$	$\frac{1}{2} \times 2$	10.10	1,000	7 3	$\frac{1}{2} \times 4 \frac{3}{4}$	$\frac{1}{2} \times 4 \frac{3}{4}$	38.00	250	36 22	$\frac{1}{2} \times 8$	$\frac{1}{2} \times $			

STANDARD STEEL TAPER PINS



Fig. 43SA
TAPER ONE-QUARTER INCH TO THE FOOT
Price per 100

Diameter at Large End	.156	.172	.193	.219	.250	.289	.341	.409	.492	.591	.706
Approximate Fractional Size	$\frac{3}{32}$	$\frac{11}{64}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{11}{16}$	$\frac{1}{2}$	$\frac{13}{16}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
No.	0	1	2	3	4	5	6	7	8	9	10
$\frac{3}{4}$	\$1.80	\$2.00	\$2.10	\$2.30	\$2.50	\$2.75	\$3.00	....	....	....	....
1	2.05	2.25	2.35	2.55	2.75	3.00	3.25	\$3.75	....	....	....
$1\frac{1}{4}$	2.30	2.50	2.60	2.80	3.00	3.25	3.50	4.00	\$4.65	....	....
$1\frac{1}{2}$	2.55	2.75	2.85	3.05	3.25	3.50	3.75	4.25	5.00	\$7.00	\$9.00
$1\frac{3}{4}$	2.80	3.00	3.10	3.30	3.50	3.75	4.00	4.50	5.40	7.50	9.50
2	....	3.25	3.35	3.55	3.75	4.05	4.35	4.75	5.80	8.00	10.00
$2\frac{1}{4}$	....	....	3.60	3.80	4.00	4.40	4.75	5.25	6.25	8.60	10.75
$2\frac{1}{2}$	....	....	....	4.05	4.25	4.75	5.20	5.75	6.75	9.20	11.50
$2\frac{3}{4}$	....	....	....	4.30	4.50	5.10	5.70	6.25	7.25	9.80	12.25
3	....	....	....	4.55	4.75	5.45	6.25	6.75	7.80	10.50	13.25
$3\frac{1}{4}$	....	....	....	....	....	....	6.75	7.25	8.40	11.20	14.25
$3\frac{1}{2}$	....	....	....	....	....	....	7.25	7.75	9.00	11.90	15.25
$3\frac{3}{4}$	....	....	....	....	....	....	7.75	8.25	9.60	12.60	16.25
4	....	....	....	....	....	....	8.25	8.75	10.20	13.30	17.25
$4\frac{1}{4}$	....	....	....	....	....	....	....	....	10.80	14.00	18.25
$4\frac{1}{2}$	....	....	....	....	....	....	....	....	11.40	14.70	19.25
$4\frac{3}{4}$	....	....	....	....	....	....	....	....	....	15.40	20.25
5	....	....	....	....	....	....	....	....	....	16.10	21.25
$5\frac{1}{4}$	....	....	....	....	....	....	....	....	....	16.80	22.25
$5\frac{1}{2}$	....	....	....	....	....	....	....	....	....	....	23.25
$5\frac{3}{4}$	....	....	....	....	....	....	....	....	....	....	24.25
6	....	....	....	....	....	....	....	....	....	....	25.25

Prices on sizes 5/0 to 2/0 and 11 to 14 quoted on request. Special Taper Pins made to specifications.

FLAT SPRING KEYS

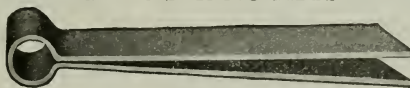


Fig. 43SB
16 AND 17 WIRE GAUGE

Size Ins.	List Price per 1000	Quantity	Approx. Weight per 1000, in pounds	Size Ins.	List Price per 1000	Quantity	Approx. Weight per 1000, in pounds
$\frac{3}{8}$ x $1\frac{1}{4}$	\$39.00	Bulk	17	$\frac{5}{8}$ x $1\frac{3}{4}$	\$78.00	Bulk	43
$\frac{3}{8}$ x $1\frac{1}{2}$	44.50	Bulk	21	$\frac{5}{8}$ x 2	84.50	Bulk	45
$\frac{3}{8}$ x $1\frac{3}{4}$	50.00	Bulk	26	$\frac{5}{8}$ x $2\frac{1}{4}$	91.00	Bulk	50
$\frac{3}{8}$ x 2	55.50	Bulk	29	$\frac{5}{8}$ x $2\frac{1}{2}$	97.50	Bulk	55
$\frac{3}{8}$ x $2\frac{1}{4}$	61.00	Bulk	31	$\frac{5}{8}$ x $2\frac{3}{4}$	104.00	Bulk	58
$\frac{3}{8}$ x $2\frac{1}{2}$	66.50	Bulk	33	$\frac{5}{8}$ x 3	110.50	Bulk	62
$\frac{3}{8}$ x $2\frac{3}{4}$	72.00	Bulk	37	$\frac{5}{8}$ x $3\frac{1}{4}$	117.00	Bulk	65
$\frac{3}{8}$ x 3	77.50	Bulk	39	$\frac{5}{8}$ x $3\frac{1}{2}$	123.50	Bulk	70
$\frac{1}{2}$ x $1\frac{1}{4}$	52.00	Bulk	35	$\frac{3}{4}$ x 2	104.00	Bulk	50
$\frac{1}{2}$ x $1\frac{1}{2}$	58.00	Bulk	38	$\frac{3}{4}$ x $2\frac{1}{4}$	111.00	Bulk	57
$\frac{1}{2}$ x $1\frac{3}{4}$	64.00	Bulk	42	$\frac{3}{4}$ x $2\frac{1}{2}$	118.00	Bulk	63
$\frac{1}{2}$ x 2	70.00	Bulk	44	$\frac{3}{4}$ x $2\frac{3}{4}$	125.00	Bulk	65
$\frac{1}{2}$ x $2\frac{1}{4}$	76.00	Bulk	46	$\frac{3}{4}$ x 3	132.00	Bulk	69
$\frac{1}{2}$ x $2\frac{1}{2}$	82.00	Bulk	48	$\frac{3}{4}$ x $3\frac{1}{4}$	139.00	Bulk	73
$\frac{1}{2}$ x $2\frac{3}{4}$	88.00	Bulk	51	$\frac{3}{4}$ x $3\frac{1}{2}$	146.00	Bulk	77
$\frac{1}{2}$ x 3	94.00	Bulk	55				

WROUGHT STEEL HINGES AND HASPS

WROUGHT STEEL HEAVY STRAP HINGES



Fig. 902

Size, Length of Each Leaf, inches	No. 902 Plain Steel per Dozen Pairs	No. 954 Japanned per Dozen Pairs	Width at Joint, inches	Average Weight per Dozen Pairs pounds
4	\$1.60	\$1.75	1 $\frac{3}{16}$	6
5	2.15	2.35	1 $\frac{11}{16}$	10
6	2.80	3.10	2 $\frac{1}{2}$	19
8	4.50	4.95	3	34
10	6.80	7.50	3 $\frac{7}{8}$	51
12	10.40	11.45	4	82
14	12.20	13.40	4 $\frac{1}{2}$	91
16	14.00	15.40	4 $\frac{5}{8}$	112

WROUGHT STEEL HINGE HASPS

HINGE HASP STAPLES



Fig. 913

Fig. 912

Size Length of Strap inches	No. 912 Plain Steel per Single Dozen	No. 964 Japanned per Single Dozen	Width at Joint inches	Average Weight per Dozen Pounds
3	\$0.50	\$0.55	1 $\frac{1}{8}$	2
4 $\frac{1}{2}$	.60	.65	1 $\frac{1}{8}$	2 $\frac{3}{4}$
6	.80	.90	1 $\frac{1}{2}$	5
8	1.05	1.15	1 $\frac{7}{8}$	7 $\frac{3}{4}$
10	1.50	1.65	2 $\frac{3}{8}$	12 $\frac{1}{2}$
12	2.10	2.30	2 $\frac{3}{4}$	19

No. 913 Per Single Doz.	Projection of Staple ins.	For Hasps inches	Size of Plates inches
2 $\frac{3}{4}$ x 2	$\frac{3}{4}$	3 and 4 $\frac{1}{2}$	\$0.20
1 $\frac{1}{2}$ x 1 $\frac{1}{8}$	$\frac{3}{4}$	6	.23
1 $\frac{7}{8}$ x 1 $\frac{1}{4}$	$\frac{3}{4}$	8	.30
2 x 1 $\frac{1}{2}$	1 $\frac{1}{8}$	10 and 12	.38

WROUGHT STEEL LIGHT STRAP HINGE



Fig. 900

Size Length of Each Leaf inches	No. 900 Plain Steel, per Doz. Pairs	No. 952 Japanned per Doz. Pairs	Width at Joint inches	Average Weight per Dozen Pairs pounds
3	\$0.85	\$0.95	1 $\frac{1}{8}$	2 $\frac{1}{2}$
4	1.10	1.20	1 $\frac{1}{8}$	4
5	1.35	1.50	1 $\frac{1}{16}$	6 $\frac{1}{4}$
6	1.70	1.90	1 $\frac{1}{16}$	9
7	2.10	2.30	1 $\frac{7}{8}$	13
8	2.40	2.65	1 $\frac{7}{8}$	14 $\frac{1}{2}$
10	3.30	3.65	2 $\frac{1}{16}$	20
12	4.90	5.40	2 $\frac{3}{4}$	33
14	6.40	7.05	2 $\frac{1}{2}$	41
16	7.90	8.70	3	61

WROUGHT STEEL LIGHT T-HINGES



Fig. 904

Size Length of Strap inches	No. 904 Plain Steel per Doz. Pairs	No. 956 Japanned per Dozen Pairs	Width of Strap at Joint inches	Length of Joint inches	Average Weight per Dozen Pairs pounds
3	\$0.75	\$0.85	1 $\frac{1}{16}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$
4	.80	.90	1 $\frac{1}{16}$	2 $\frac{3}{4}$	3 $\frac{1}{2}$
5	1.00	1.10	1 $\frac{1}{16}$	3	4 $\frac{3}{4}$
6	1.20	1.30	1 $\frac{1}{4}$	3 $\frac{1}{2}$	6 $\frac{1}{4}$
7	1.35	1.50	1 $\frac{1}{4}$	3 $\frac{1}{2}$	8 $\frac{3}{4}$
8	1.50	1.65	1 $\frac{1}{16}$	4	9 $\frac{1}{2}$
9	1.90	2.10	1 $\frac{3}{8}$	4 $\frac{1}{2}$	13
10	2.20	2.40	1 $\frac{3}{8}$	4 $\frac{1}{2}$	13 $\frac{1}{2}$
12	3.00	3.30	2 $\frac{1}{8}$	4 $\frac{3}{4}$	20 $\frac{1}{2}$
14	3.90	4.30	2 $\frac{1}{4}$	5 $\frac{1}{2}$	33
16	5.15	5.65	2 $\frac{3}{8}$	6	38 $\frac{1}{2}$

WROUGHT STEEL EXTRA HEAVY T-HINGES



Fig. 908

Size Length of Strap inches	No. 908 Plain Steel per Dozen Pairs	No. 960 Japanned per Dozen Pairs	Width of Strap at Joint inches	Length of Joint inches	Average Weight per Dozen Pairs pounds
4	\$1.80	\$2.00	1 $\frac{5}{8}$	3 $\frac{1}{2}$	7 $\frac{1}{2}$
5	2.45	2.70	1 $\frac{11}{16}$	4	13 $\frac{1}{2}$
6	3.00	3.30	2 $\frac{1}{16}$	4 $\frac{1}{2}$	21
8	5.00	5.50	2 $\frac{3}{8}$	5 $\frac{1}{2}$	36
10	7.40	8.15	3 $\frac{1}{8}$	7	50
12	10.70	11.75	3 $\frac{3}{8}$	7 $\frac{3}{4}$	78
14	11.80	13.00	3 $\frac{3}{8}$	7 $\frac{3}{4}$	82
16	12.60	13.85	3 $\frac{3}{8}$	7 $\frac{3}{4}$	93

WROUGHT STEEL LOOSE PIN BUTTS

With Ball Tips



Fig. 731

Size, Open inches	No. 823 Bright Steel per dozen pairs	No. 731 Japanned per dozen pairs	Screw Holes in each Butt	Size of Screw Number	Dozen pairs in a Case	Average Weight of Full Case lbs.
2 x 2	\$1.30	\$1.70	4	7	25	100
2 1/2 x 2	1.50	1.90	6	8	25	135
2 1/2 x 2 1/2	1.60	2.00	6	8	25	150
3 x 3	1.80	2.10	6	9	25	192
3 x 3 1/2	1.85	2.15	6	9	20	180
3 1/2 x 3	2.15	2.25	6	10	20	234
3 1/2 x 3 1/2	2.25	2.40	6	10	15	200
4 x 3 1/2	2.55	2.75	8	10	15	240
4 x 4	2.75	2.90	8	10	12	212
4 1/2 x 4	3.20	3.75	8	11	12	266
4 1/2 x 4 1/2	3.35	4.00	8	11	10	230
5 x 5	4.50	5.50	8	12	6	218
5 1/2 x 5 1/2	6.00	7.50	8	13	6	240
6 x 6	7.00	9.20	8	13	6	318

The 3 1/2 inch and larger have five knuckles in the joint; the smaller sizes, three

WROUGHT STEEL BUTTS

WROUGHT STEEL LIGHT LOOSE PIN BUTTS

With Ball Tips

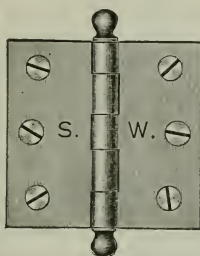


Fig. 289

Prices are per dozen pairs, and include plated screws to match.

One-half dozen pairs in a box, with screws; 25 dozen in a case.

Size, Open inches	No. 289A Platinized Light Bronze	No. 289B Platinized Statuary Bronze	No. 289SB Sand Finish Statuary Bronze	No. 28972 Platinized Antique Copper	No. 289F Platinized Bull Brass
2 x 2	\$4.00	\$4.45	\$4.90	\$4.45	\$4.45
2 1/2 x 2	4.10	4.55	5.00	4.55	4.55
2 1/2 x 2 1/2	4.25	4.70	5.15	4.70	4.70
3 x 3	4.15	4.60	5.05	4.60	4.60
3 x 3 1/2	4.25	4.70	5.15	4.70	4.70
3 1/2 x 3	4.50	4.95	5.40	4.95	4.95
3 1/2 x 3 1/2	4.85	5.30	5.75	5.30	5.30
4 x 4	5.00	5.45	5.90	5.45	5.45

Prices on larger sizes upon application.

The 2 1/2 x 3 inch and larger have five knuckles in the joint; smaller sizes, three.

WROUGHT STEEL LOOSE PIN LIGHT NARROW BUTTS

With Ball Tips

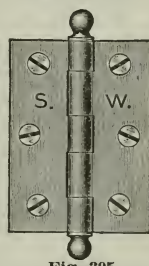


Fig. 295

Prices are per dozen pairs, and include plated screws to match.

One half-dozen pairs in a box, with screws; 25 dozen in a case.

Size, Length of Joint inches	No. 295A Platinized Light Bronze	No. 295B Platinized Statuary Bronze	No. 295SB Sand Finish Statuary Bronze	No. 295D2 Platinized Antique Copper	No. 295F Platinized Bull Brass	No. 295F2 Platinized Antique Brass
1 1/2	\$2.90	\$3.35	\$3.80	\$3.35	\$3.35	\$3.35
1 3/4	3.20	3.65	4.10	3.65	3.65	3.65
2	3.60	4.05	4.50	4.05	4.05	4.05
2 1/4	3.75	4.20	4.65	4.20	4.20	4.20
2 1/2	3.90	4.35	4.80	4.35	4.35	4.35
2 3/4	4.60	5.05	5.50	5.05	5.05	5.05
3	5.00	5.45	5.90	5.45	5.45	5.45
3 1/2	5.50	6.00	6.50	6.00	6.00	6.00
4	6.50	7.00	7.50	7.00	7.00	7.00

Prices on larger sizes upon application.

The 2 1/2 inch and larger have five knuckles in the joint; smaller sizes, three.

FOR COMPLETE LINE OF WOOD SCREWS, SEE INDEX

WROUGHT STEEL BUTTS—HINGE SETS

WROUGHT STEEL BROAD BUTTS

Fast Joint

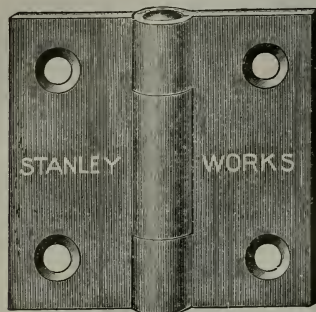


Fig. 80S. Bright Steel

Size Open inches	Per dozen pairs	Screw Holes in each Butt	Size of Screw Number	Dozen Pairs in a Case	Average Weight of Full Case lbs.
2 x 2	\$1.20	4	7	50	162
2 1/2 x 2 1/2	1.25	4	7	50	204
2 1/2 x 3	1.60	6	8	50	255
3 x 2 1/2	1.90	6	8	25	152
3 x 3	2.05	6	9	25	168
3 x 3 1/2	2.40	6	9	25	194
3 1/2 x 3 1/2	2.70	6	9	25	219
3 1/2 x 3	3.20	6	10	25	258
3 1/2 x 3 1/2	3.50	6	10	20	235
3 1/2 x 4	4.00	6	10	20	263
4 x 4	4.30	8	10	15	236
4 1/2 x 4 1/2	5.60	8	11	10	230
5 x 5	6.90	8	12	8	251
5 1/2 x 5 1/2	9.00	8	13	5	188
6 x 6	10.20	8	13	5	215

3x3 1/2 inch and smaller, one dozen pairs in a box; 3 1/2 x 3 to 4 1/2 x 4 1/2 inch inclusive, one-half dozen; larger sizes, one-quarter dozen.

The 3 1/2 x 3 inch and larger have five knuckles in the joint; the smaller sizes, three.

WROUGHT STEEL LIGHT
NARROW BUTTS

Fig. 83S. Bright Steel

Size, Length inches	Bright Steel per dozen pairs	Width, Open inches	Screw Holes in each Butt	Size of Screws Number	Dozen Pairs in a Case	Average wt. of Full Case pounds
1 3/4	\$0.40	1 11/16	4	2	100	24
1 1/2	.40	1	4	3	100	51
1 1/4	.50	1 1/16	4	4	100	69
1 1/2	.65	1 7/16	4	5	100	99
1 3/4	.80	1 7/16	4	6	100	131
2	.90	1 9/16	4	7	100	189
2 1/4	1.05	1 11/16	6	6	50	108
2 1/2	1.10	1 11/16	6	6	50	127
2 3/4	1.30	1 1/2	6	7	50	176
3	1.45	2 1/4	6	8	50	204
3 1/4	1.70	2 1/2	6	8	50	243
3 1/2	2.00	2 3/4	6	8	25	152
3 3/4	2.70	2 1/2	6	8	25	180
4	2.85	2 3/4	8	9	20	182
4 1/2	3.70	3 3/16	8	10	15	210
5	4.50	3 11/16	8	10	10	173
5 1/2	6.00	3 11/16	8	10	10	226
6	7.10	3 11/16	8	11	10	226

Prices on larger sizes upon application.

3 1/2 inch and smaller, one dozen pairs in a box; 3 1/2 to 4 1/2 inch, one-half dozen; 5, 5 1/2 and 6 inch, one-quarter dozen.

The 2 1/2 inch and larger have five knuckles in the joint; the smaller sizes, three.

WROUGHT STEEL SCREEN DOOR
HARDWARE

Complete Sets for Screen Doors in Convenient Packages

Set No. 1752J

Each set consists of one pair of ornamental wrought steel loose-pin butts, 2 1/2 x 2 1/2; one wrought steel pull, 3 1/2 inches long; one wire spring No. 2; one gate hook and eye.

The butts are applied to the surface of the door, thus saving the time required in mortising. When once applied it is not necessary to remove the screws. By merely slipping out the pins the door is easily taken off and can be as readily rehung when necessary.

No. 1752J. Japanned finish. Per gross sets with screws \$29.60

No. 1753J. Hinges, per doz. pairs with screws 1.35

Each set in a box, with screws; 12 sets in a carton; one gross sets in a case.

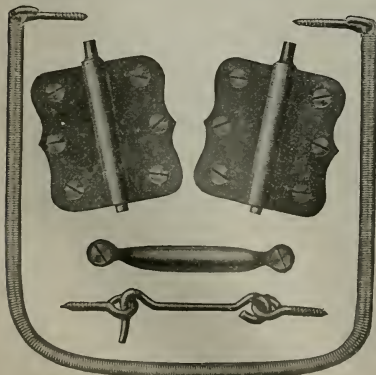


Fig. 1752J

WROUGHT STEEL BUTTS—HINGE SETS

WROUGHT STEEL REVERSIBLE BUTTS

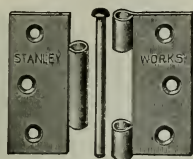


Fig. 804

Size, Open inches	Screw Holes in Each Butt	Dozen pairs in Case	Average Weight of Full Case lbs.	No. 804 Bright Steel per dozen pairs
2 x 2	4	50	162	\$1.40
2 x 2 1/2	4	50	204	1.50
2 1/2 x 2 1/2	6	50	226	1.60
2 1/2 x 3	6	50	255	1.80
3 x 2 1/2	6	25	155	2.20
3 x 3	6	25	167	2.40
3 x 3 1/2	6	25	196	2.60
3 1/2 x 3	6	25	221	3.00
3 1/2 x 3 1/2	6	20	207	3.60
3 1/2 x 4	6	15	238	3.80
4 x 3 1/2	8	15	191	4.30
4 x 4	8	12	218	4.60
4 x 4 1/2	8	12	192	4.70
4 1/2 x 4	8	10	215	4.80
4 1/2 x 4 1/2	8	10	200	5.30
5 x 5	8	8	218	5.90
5 x 5 1/2	8	5	255	7.70
6 x 6	8	5	203	9.60
			215	11.40

No. 804, 3x3 1/2 inch and smaller, one dozen pairs in a box, 3 1/2 x 3 to 4 1/2 x 4 1/2 inch inclusive, one-half dozen; larger sizes, one-quarter dozen.

Other numbers, 4 1/2 x 4 1/2 inch and smaller, one-half dozen pairs in a box, with screws; larger sizes, one-quarter dozen.

The 3 1/2 x 3 inch and larger have five knuckles in the joint; the smaller sizes, three.

When two dimensions are given, the first always indicates the length of joint.

WROUGHT STEEL LOOSE PIN LIGHT NARROW BUTTS

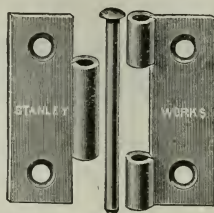


Fig. 840. Bright Steel

Size, Length inches	Width, Open inches	Screw Holes in Each Butt	Size of Screw Number	Dozen Pairs in a Case of No. 840	Average Weight of Full Case lbs.	Per dozen pairs
1	1	4	3	100	51	\$0.60
1 1/4	1 1/4	4	4	100	69	.75
1 1/2	1 1/2	4	5	100	100	.90
1 3/4	1 3/4	4	5	100	132	1.00
2	1 3/4	4	6	100	191	1.10
2 1/4	1 3/4	6	6	50	110	1.25
2 1/2	1 3/4	6	6	50	128	1.45
2 3/4	1 3/4	6	7	50	175	1.55
3	2	6	7	50	208	1.80
3 1/4	2 1/4	6	8	50	248	2.25
3 1/2	2 1/4	6	8	25	152	2.70
3 3/4	2 1/4	6	8	25	180	3.30
4	2 1/4	8	9	20	185	3.70
4 1/2	3	8	10	20	227	4.45
5	3 1/2	8	10	15	202	5.50
5 1/2	3 1/2	8	10	10	178	7.50
6	3 1/2	8	11	10	225	8.85

The 2 1/2 inch and larger have five knuckles in the joint; smaller sizes, three.

3 inch and smaller, one dozen pairs in a box; 3 1/4 to 5 1/2 inch inclusive, one-half dozen; 6 inch, one-quarter dozen.

KING DETACHABLE AND ADJUSTABLE SPRING HINGE SET

An All Quality Low Priced Hinge Set

Size 2 3/4 x 3 3/4 inches.

Set comprises 1 pair hinges with screws, pull-out hook and eye, packed in carton.

Hinges have removable pin and adjustable spring tension. All-steel construction. Simple, strong, durable and attractive in design. The spring tension is easily and quickly adjusted with a common wire nail, and the door taken down by simply releasing the spring and withdrawing the pin without removing any screws or using any tools.

No. 02600.	Japanned Sets.....	per dozen	\$3.80
No. 02605.	Dull Brass Sets.....	"	4.75
No. 02607.	Antique Copper Sets.....	"	4.75

Fig. 02600

FOR WOOD SCREWS AND SCREW DRIVERS, SEE INDEX

HASPS, HOOKS AND STAPLES

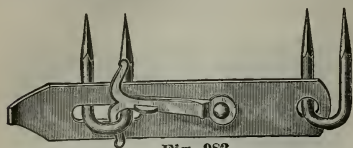
WROUGHT HASPS AND STAPLES
With Double Hooks

Fig. 982

Size inches	Length of Staples inches	No. 982 Plain per dozen	No. 988 Japanned per dozen	No. 1318 Galvanized per dozen
5	2	\$1.20	\$1.40	\$2.25
6	2 1/4	1.40	1.65	2.50
7	2 1/2	1.60	1.90	3.00
8	2 1/2	1.80	2.10	3.50
9	2 3/4	2.20	2.60	4.00
10	2 3/4	2.50	3.00	4.50
11	3 1/4	3.00	3.75	6.00
12	3 1/2	3.84	4.50	7.00

One dozen in a box.

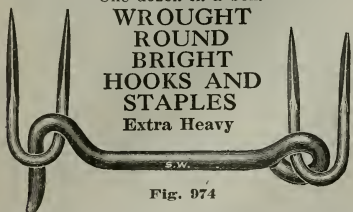
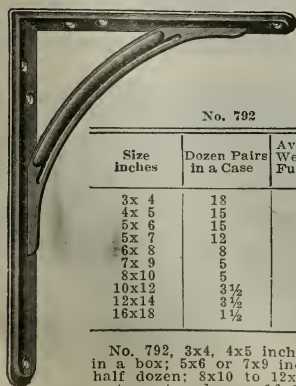
WROUGHT
ROUND
BRIGHT
HOOKS AND
STAPLES
Extra Heavy

Fig. 974

Size Staples inches	Size Hook inches	Diameter of Wire inches	No. 974 Plain steel per gross
2 1/4	4	1/4	\$15.00
2 1/2	5	5/16	24.00
2 3/4	6	3/8	30.00

Packed one-fourth gross in a box.

WROUGHT STEEL SHELF
BRACKETS

No. 792

Size inches	Dozen Pairs in a Case	Average Weight of Full Case lbs.	Japanned per dozen pairs
3x4	18	60	\$ 1.20
4x5	15	80	1.60
5x6	15	100	2.20
5x7	12	85	2.40
6x8	8	76	3.00
7x9	5	60	3.60
8x10	5	74	4.20
10x12	3 1/2	85	6.00
12x14	3 1/2	120	9.00
16x18	1 1/2	92	20.00

No. 792, 3x4, 4x5 inch, one dozen pairs in a box; 5x6 or 7x9 inch inclusive, one-half dozen; 8x10 to 12x14 inch inclusive, one-quarter dozen; 16x18 inch, one pair in a package.

Fig. 792

FOR WOOD SCREWS, STOVE BOLTS AND LAG SCREWS, SEE INDEX

WROUGHT STEEL "SAFETY"
HASPS

PATENTED

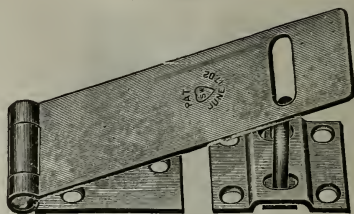


Fig. 915.

Size inches	Length of Strap inches	Width at Joint inches	Average Weight of Full Case lbs.	No. 915 Plain Steel per Single dozen	No. 915J Japanned per dozen with Screws
3	1 1/2	1 1/2	166	\$0.90	\$1.10
4 1/2	1 1/2	1 1/2	168	1.20	1.50
6	1 1/2	1 1/2	222	1.70	2.20

Above packed 'one-half dozen (single) in a box and all with screws to match except No. 915.

WROUGHT EXTRA HEAVY
HINGE HASPS

Fig. 941

Extreme length, 7 1/2 inches; width, 1 1/4 inches; thickness, 1/2 inch.

No. 941. Plain steel.....per single dozen \$6.75

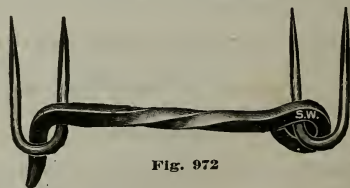
WROUGHT SQUARE HOOKS
AND STAPLES

Fig. 972

Size inches	Length of Staples inches	No. 972 Plain per gross	No. 972J Japanned per gross
3	1 1/2	\$8.00	....
3 1/2	1 3/4	9.00	....
4	2	10.00	\$11.50
4 1/2	2	11.00	13.00
5	2 1/4	12.00	14.00
5 1/2	2 1/2	13.00	15.50
6	2 1/2	14.00	16.50
7	2 3/4	22.00	....
8	2 3/4	25.00	....

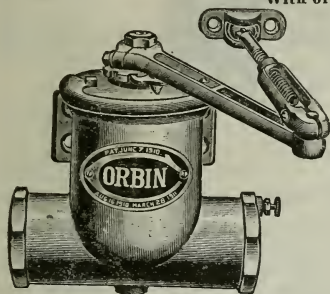
Packed one-fourth gross in a box.

DOOR CHECKS

THE CORBIN DOOR CHECK AND SPRING

1911 MODEL

With or Without Hold-Back Attachment



The 1911 model has many features which are different from any found in those previously made. It has been tested for an extended period, under the most severe conditions, and has proven itself strong and reliable in every particular. It is offered with the confident expectation that it will be found superior to any other checking device in existence.

Hand—Right or left hand without change. In applying the tension, the spring is wound in one direction for right hand and in the other for left hand.

Check—A rack and pinion mechanism is used to control the checking action. This is in effect from the moment the door begins to close and gives a steady, uniform movement, free from shock or jar. The valve permits adjustment to any speed desired.

The Spring is of a form that gives a quick, live resilient action, with a minimum of crystallization from use. The construction of the check makes it impossible to apply a greater tension to the spring than it is designed to withstand. Every precaution has been taken to guard against breakage.

is applied to the liquid in the cylinder or checking chamber, the capillary attraction alone could cause the liquid to rise to the top of the check, and this is absolutely prevented by the unusual length of the gland and the character of the packing.

The Bearings are liberally designed with a view to reducing the effect of wear. The bottom bearing holds all parts in alignment and adds to the rigidity.

The Parts are few in number, strong and easily replaced. The interior of the check is easily accessible, it only being necessary to first remove the arm and then the cover and ratchet in one piece to reach the spring. The same brackets are used as with the Universal or 1899 pattern.

The Liquid is a compound which will not freeze and is not affected by extreme heat. The working parts of the check are immersed in it and their action is lubricated by it.

CLASSIFICATION

- No. 1. For screen doors.
 - No. 2. For door between dining room and butler's pantry, car doors, etc., or any inside door not over 7 feet by 2 feet.
 - No. 3. For outside doors not larger than 7 feet by 2½ feet, steamboat doors, vestibule doors, etc.
 - No. 4. For outside doors not larger than 7½ feet by 3 feet.
 - No. 5. For doors not larger than 7½ feet by 4 feet.
 - No. 6. For extra high doors and extra heavy doors, such as are used in public buildings, stores, hotels, railroad depots, etc.
- If the door is unusually heavy, or very strong draughts are to be encountered use one size larger than specified.

PRICE LIST

Finish	IRON	Price Each					
		Nos.	1	2	3	4	5
Reg.	Bronzed		\$3.25	\$4.25	\$5.00	\$6.00	\$8.00
D	Dead Black (Japanned)		3.25	4.25	5.00	6.00	8.00
Extra	Coils		.36	.48	.60	.78	1.20
							1.50

G. B. C. DOOR CHECK AND SPRING

Works on either right or left hand door. Double action piston, double regulating valves. Easy to take apart or put together. Gold bronze finish.

In ordering be sure to specify whether for right hand or left hand door.

CLASSIFICATION

- No. 1. For screen doors.
- No. 2. For door between dining room and butler's pantry, car doors, etc., or any inside door not over 7 feet by 3 feet.
- No. 3. For outside doors not larger than 7 feet by 2½ feet, steamboat doors, vestibule doors, etc.
- No. 4. For outside doors not larger than 7½ feet by 3 feet.
- No. 5. For doors not larger than 7½ feet by 4 feet.
- No. 6. For extra high doors and extra heavy doors, such as are used in public buildings, stores, hotels, railroad depots, etc.

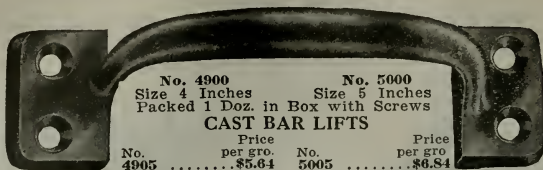
If the door is unusually heavy, or very strong draughts are to be encountered use one size larger than specified.

PRICE LIST

Finish	IRON	Price Each					
		Nos.	1	2	3	4	5
Reg.	Bronzed		\$3.25	\$4.25	\$5.00	\$6.00	\$8.00
D	Japanned		3.25	4.25	5.00	6.00	8.00
Extra	Coils		.36	.48	.60	.78	1.20
							1.50

GEO. B. CARPENTER & CO.

DOOR AND WINDOW HARDWARE



No. 4900		No. 5000	
Size 4 Inches		Size 5 Inches	
Packed 1 Doz. in Box with Screws			
CAST BAR LIFTS			
No.	Price per gro.	No.	Price per gro.
4905	\$5.64	5005	\$6.54
4907	5.64	5007	6.54
4908	7.76	5008	9.41
Shpg. wt. 20 lbs. per gross.		Shpg. wt. 30 lbs. per gross.	



Fig. 1094

EXTRA HEAVY WROUGHT STEEL SQUARE BOLTS Sherardized Steel Springs

Size inches	No. 1094	
	Japanned Plates	Polished Bolts
	Floor Plates	per doz.
4		\$3.25
5		3.40
6		3.60
7		4.75
8		5.25
9		6.00
10		8.00
12		9.75
14		11.00

4, 5 and 6 inch have bolts $\frac{1}{2}$ inch square.

7, 8 and 9 inch have bolts $\frac{5}{8}$ inch square.

10, 12 and 14 inch have bolts $\frac{3}{4}$ inch square.

6 inch and smaller, 1 doz. in a box; 7, 8 and 9 inch, $\frac{1}{2}$ doz.; 10, 12 and 14 inch, $\frac{1}{4}$ doz.

WROUGHT STEEL PADLOCK EYE

This No. 1245 heavy wrought steel padlock eye is made in three sizes and three gauges, and is a practical and inexpensive device for securely fastening garage, barn, shed and other doors.

No.	Gauge of Metal	Size of Screw	Size of Hole inches
1	.095	$\frac{3}{4}$ x 7	$\frac{1}{2}$ x $\frac{7}{8}$
2	.109	$\frac{7}{8}$ x 11	$\frac{3}{4}$ x $\frac{5}{8}$
3	.134	1 x 13	$\frac{1}{2}$ x $\frac{3}{4}$

Fig. 1245

Size No.	Size of Plates inches	No. 1245J Japanned per doz. pairs with screws
1	$1\frac{1}{2}$ x $1\frac{1}{2}$	\$0.75
2	$2\frac{1}{4}$ x $1\frac{1}{2}$	1.00
3	$2\frac{3}{4}$ x $2\frac{1}{2}$	1.40

SASH LOCKS



Fig. 4505

No. 4505. Dull brass.....per gross \$10.20
No. 4507. Antique copper.....10.20

WROUGHT STEEL HEAVY DOOR HANDLES

For Garages, Stables, Freight Cars, Etc.



Fig. 1265

One-half dozen in a box, with $1\frac{1}{2}$ x 13 inch screws to match.

These handles are absolutely rust-proof. They have a smooth, velvety surface which is a part of the metal itself, and will not chip or wear off.

The No. 1265 Handle is re-enforced at points of greatest strain, and is designed to develop the full strength of the metal. The grip is of generous size and conform to the shape of the hand. Without question this is the strongest and most comfortable handle made.

No. 1265J Japanned per doz. with screws	No. 1265Z Sherardized per doz. with screws	Size Length, Extreme inches	Width inches	Width of Ends inches	Net Weight per 100 doz. lbs.
\$5.00	6.00	10 $\frac{1}{2}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	923

WROUGHT STEEL THUMB LATCHES

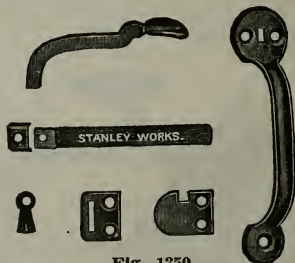


Fig. 1250

Size No.	Length of Handle Extreme inches	Dozen in a Case	Average Weight of Full Cases lbs.	No. 1250J Japanned per doz. with screws
1	5 $\frac{1}{2}$	20	76	\$1.90
2	6 $\frac{1}{2}$	20	104	2.30
3	7 $\frac{1}{2}$	10	87	3.50
4	8 $\frac{1}{2}$	6	104	6.00

FOR WOOD SCREWS, SEE INDEX

BARREL BOLTS AND LATCHES

WROUGHT STEEL CHAIN BOLTS

PATENTED APRIL 27, 1909

Prices are per dozen, and include screws to match.
No. 1055J. Finish, japanned.

Size, 3 inches.....\$5.00

Size, 6 inches..... 7.00

Width of plate, 1½ inches for the 3 inch; 2 inches for the 6 inch.

Bolts, ¾ inch round; chain, 24 inches long.

One-half dozen in a box, with screws.

These bolts can be reversed by simply pulling the bolt out and turning it around. They are packed with one chain guide and two staples, one strap and one angle. The strap staple is extra heavy.

Box staple will be packed with 6 inch when ordered.

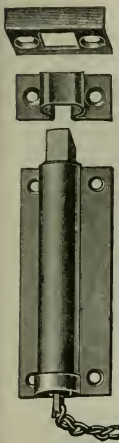


Fig. 1055J

WROUGHT STEEL FOOT BOLTS

Prices are per dozen with screws to match.

No. 1056J. Finish, japanned.

Size, 3 inches.....\$4.75

Size, 6 inches..... 6.25

One-half dozen in a box, with screws.

Plate of 3 inch, 2½ inches long, 1½ inches wide.

Plate of 6 inch, 5 inches long, 2 inches wide.

Floor plate of 3 inch, 1¼x1 inch.

Floor plate of 6 inch, 2¼x1¼ inches.

3 inch has ½ inch round bolt; 6 inch has ¾ inch bolt.

3 inch has ½ inch stroke; 6 inch has 1 inch stroke.

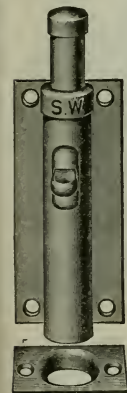


Fig. 1056J

WROUGHT STEEL LIGHT BARREL BOLTS

BRASS KNOBS

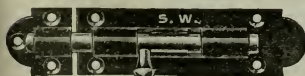


Fig. 1078

One dozen in a box.

No. 1078. Japanned plates, polished bolts.

Size, inches	2½	3	4	5	6
Per dozen	\$1.50	\$1.90	\$2.15	\$2.50	\$2.90

WROUGHT STEEL TRANSOM BOLTS

STRAIGHT AND STRAP STAPLES

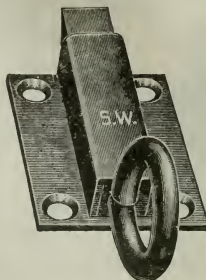


Fig. 1165

The bolt proper is cold forged and case and staples are of unbreakable wrought cold rolled steel. Spring is made of best grade of piano wire. The large ring handle not only furnishes a perfect finger grip but is of convenient size for operation with window stick. Diameter of handle .295.

No. 1165. Japanned, with screws...per dozen \$7.00

One dozen in a box.

WROUGHT STEEL BARREL BOLTS COMMON STAPLES



Fig. 1084

No. 1084. Japanned plates, polished bolts, brass knobs.

Size, inches	3	4	5	6	8
Per dozen	\$2.15	\$2.45	\$3.00	\$3.40	\$6.50

No. 1082. Japanned plates, polished bolts, tinned knobs.

Size, inches	3	4	5	6	8
Per dozen	\$2.15	\$2.45	\$3.00	\$3.40	\$6.50

8 inch, one quarter dozen in a box; 6 inch, one-half dozen; other sizes, one dozen.

WROUGHT STEEL SQUARE BOLTS



Fig. 1088

No. 1088. Japanned plates, polished bolts, sherardized steel springs and plain staples.

Size, inches	3	4	5	6	7	8	9	10	12
Per dozen	\$2.00	\$2.50	\$2.65	\$2.85	\$3.75	\$4.00	\$4.35	\$6.50	\$7.00

FOR WOOD SCREWS, SCREW DRIVERS AND HAND DRILLS, SEE INDEX

PADLOCKS

All Illustrations Half Size

IRON SECURE LEVER
PADLOCK

Self-locking. Spring shackle. 6 secure levers. 2 nickel plated flat steel keys each. Made regular with 144 changes of keys. Can be made with 4020 changes of keys and 1020 changes with master key.

List per dozen

No. 4291—2 inch, ivory black case, nickel plated shackle.....\$6.00



Fig. 4291

IRON SECURE LEVER PADLOCKS

Self-locking. Malleable iron spring shackle. 2 secure levers. 3 wards. 2 nickel plated flat steel keys each. 12 changes of keys.

List per dozen

No. 4178—1½ inch, ivory black case, brass plated shackle.....\$1.40

No. 4179—1½ inch, ivory black case, brass plated shackle.....1.50

No. 4180—1½ inch, ivory black case, brass plated shackle.....1.80

No. 4181—2 inch, ivory black case, brass plated shackle.....2.10

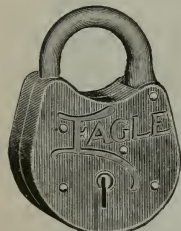


Fig. 4181

IRON PADLOCKS

Self-locking. Cast spring shackle. 2 flat steel keys each. 6 changes of keys.

List per dozen

No. 4166—1½ inch, ivory black case, brass plated shackle.....\$1.30

No. 4167—2 inch, ivory black case, brass plated shackle.....1.60

No. 4168—2½ inch, ivory black case, brass plated shackle.....1.80



Fig. 4164

IRON PADLOCKS

Self-locking. Spring shackle. 2 flat steel keys each. 3 changes of keys.

List per dozen

No. 4430—1½ inch, ivory black case, nickel plated shackle.....\$1.16

No. 4432—1½ inch, ivory black case, nickel plated shackle.....1.30

No. 4434—1½ inch, ivory black case, nickel plated shackle.....1.60



Fig. 4434



Fig. 4132H

IRON SECURE LEVER
PADLOCK

Self-locking. Spring shackle. 8 secure levers. 2 double-bitted nickel plated keys each. 12 changes of keys. Can be made with 3120 changes of keys and 780 changes, all different, to one master key, or 3120 changes, all different, to four different master keys.

List per dozen

No. 4132H—2½ inch, hot galvanized finish.....\$7.50



Fig. 4418

IRON PADLOCK

Self-locking. Cast spring shackle. 2 flat steel keys each. 6 changes of keys.

List per dozen

No. 4418—2 inch, iron, ivory black case, brass plated shackle.....\$2.00



ASSORTED PADLOCKS

No. 2460S —Assortment consists of 4 locks, each of the following.....List per assortment \$2.90
No. 4234V —2 inch, iron, blue japan finish.....List per dozen 2.90
No. 4234W —2 inch, iron, maroon japan finish....." 2.90
No. 4234Y —2 inch, iron, yellow japan finish....." 2.90

6 Locks in a box, 2 of each number.

WE DO NOT BREAK BOXES OF ASSORTED LOCKS

PADLOCKS

All Illustrations One-Half Size

BRASS PIN TUMBLER PADLOCKS

Solid Extruded Metal Case. Self-Locking. Spring Shackle. Pin Tumbler Mechanism. 2 Embossed Gold Plated Nickel Silver Keys each. No two locks alike. Changes practically unlimited.

No.	Size in.	Description	List per dozen	No.	Size in.	Description	List per dozen
04279	1	All Brass	\$14.70	04282SJ§	1 ¾	Brass Case*	\$25.70
04279S	1	Brass Case*	14.20	04283	2	All Brass	32.00
04280	1 ¾	All Brass	17.30	04283B†	2	All Brass	30.00
04280S	1 ¾	Brass Case*	16.30	04283R†	2	All Brass	32.50
04281	1 ½	All Brass	20.70	04283S	2	Brass Case*	30.00
04281S	1 ½	Brass Case*	19.70	04283SJ§	2	Brass Case*	31.50
04282	1 ¾	All Brass	25.30	04285	2 ½	Brass Case*	47.90
04282B†	1 ¾	All Brass	23.30	04285S	2 ½	Brass Case*	44.90
04282S	1 ¾	Brass Case*	24.30				



Fig. 04253

*Have Serrated Iron Shackle.
†Have Black Case and Dipped Shackle.

§Have Shackle 3 inches high.
‡Has Shackle 1 ½ inches high.

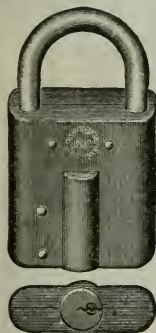


Fig. 4189



Fig. 04186S



Fig. 04263



Fig. 04614 ½

PIN TUMBLER PADLOCKS

Self-Locking. Automatic Spring Shackle that flies open to a quarter-turn position when unlocked. Pin Tumbler Mechanism. 2 Embossed Bow Nickel Silver Keys each. No two locks alike. Changes practically unlimited.

No. 4187—1 ½-inch.	Iron Case.	Bower-Barff Finish.	Nickel Plated Shackle.	List per doz.	\$13.32
No. 4188—1 ¾-inch.	Iron Case.	Bower-Barff Finish.	Nickel Plated Shackle.	"	14.70
No. 4189—2 -inch.	Iron Case.	Bower-Barff Finish.	Nickel Plated Shackle.	"	17.32

CAST BRONZE PIN TUMBLER PADLOCKS

Solid Cast Bronze Case. Self-Locking. Spring Shackle. Pin Tumbler Mechanism. 2 Embossed Gold Plated Nickel Silver Keys each. No two locks alike. Changes practically unlimited.

No. 04186S—2-inch.	Nickel Plated and Hardened Steel Shackle.	List per doz.	\$30.00
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CAST BRONZE PADLOCKS

Self-Locking. Spring Shackle. 4 Secure Levers. 2 Embossed Gold Plated Nickel Silver Keys. 144 changes of Keys. Can be made with 63 changes, with Master Key. All parts are Brass or Bronze.

No. 04263—2-inch.	List per doz.	\$21.70
No. 04263C—2-inch. With Iron Tinned Chain, 9 inches long.	"	23.80

CAST BRASS PADLOCK

Self-Locking. Spring Shackle. Ward. 2 Nickel Plated Flat Steel Keys each. 6 changes of keys.

No. 04614 ½—2 ½-inch.	Iron Shackle and Black Nickel Finish.	List per doz.	\$4.68
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NIGHT LATCHES

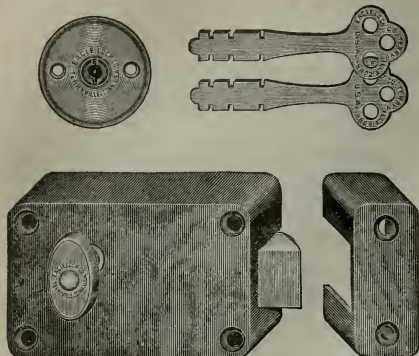


Fig. 1501

RIM NIGHT LATCH

With Indicator Knob

Japanned iron case, bronze plated knob, bolt and escutcheon; $2\frac{1}{2}$ inches from edge of door to center of cylinder; reversible; adjustable to doors from $\frac{7}{8}$ to $1\frac{3}{4}$ inches; two nickel plated double-bitted flat steel keys each; 6 changes of keys.

This latch has an oval indicator knob which indicates the position of the bolt. When bolt is in the locked position, knob stands upright, when in the unlocked position knob stands horizontal. Bolt may be held back by turning knob to the left.

No. 1501. $3\frac{1}{4} \times 2 \times \frac{3}{4}$ inches. . . List per doz. \$5.00

PIN TUMBLER RIM NIGHT LATCH

Japanned iron case, bronze cylinder, knob, bolt and ring; $2\frac{3}{8}$ inches from edge of door to center of cylinder; reversible; adjustable to doors from $\frac{7}{8}$ to $2\frac{3}{4}$ inches thick; three embossed gold plated nickel silver keys each; no two locks alike; changes practically unlimited; bolt may be held back by setting stop.

No. 3504. $3\frac{5}{8} \times 2\frac{1}{2}$ inches. List per doz. \$22.20

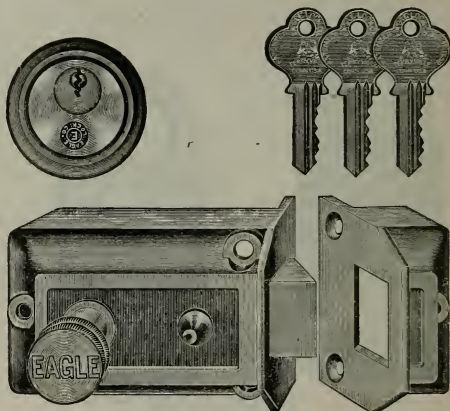


Fig. 3504

PIN TUMBLER RIM NIGHT LATCH

Japanned iron case, bronze cylinder, knob, bolt and ring; $2\frac{3}{8}$ inches from edge of door to center of cylinder; reversible; adjustable to doors from $\frac{3}{4}$ to $2\frac{3}{4}$ inches thick; three nickel silver keys each; 120 changes of keys; bolt may be held back by setting stop.

No. 3512. $3\frac{5}{8} \times 2\frac{1}{2}$ inches. List per doz. \$17.50

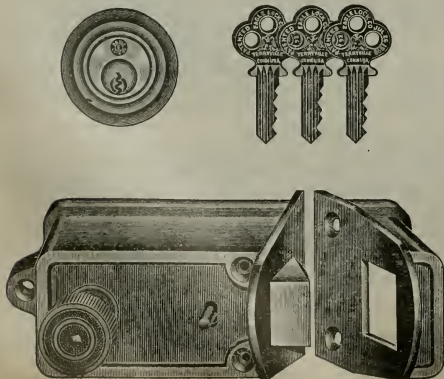
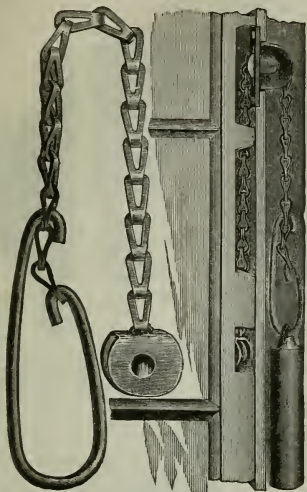


Fig. 3512

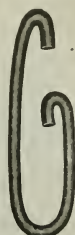
SASH AND CABLE CHAIN FIXTURES—SASH CHAIN



Showing Correct Method of Attaching Fixtures to Sash

SASH AND CABLE CHAIN FIXTURES
In Sets, Complete

- No. 1. Fixtures for A, 1 and 2 Chains, consisting of 4 hooks and 4 rings, 1 set for 2 sashes.....per set \$0.14
- No. 2. Fixtures for 0 Chains, consisting of 4 hooks and 4 rings, 1 set for 2 sashes.....per set .12



SASH CHAIN FIXTURE PARTS



Nos. 1-2 Hooks Nos. 1-2-3 Irons Nos. 1-2 Rings

No. 1

For A, 1 and 2 Chains

Hooks	per doz.	\$0.14
Rings	"	.14
Irons	"	.14

No. 2

For 0 Chains

Hooks	per doz.	\$0.12
Rings	"	.12
Irons	"	.12

SASH WEIGHTS

Approximate wt., lbs...	3	3½	4	4½	5
Diameter, inches	1½	1½	1½	1½	1½
Length, inches	5¾	7	8¾	9¾	11¾
Approximate wt., lbs...	5½	6	6½	7	7½
Diameter, inches	1½	1½	1½	1½	1½
Length, inches	12¾	13½	14½	15½	17
Approximate wt., lbs...	8	8½	9	10	11
Diameter, inches	1½	1½	1½	1½	1½
Length, inches	18	16¾	17½	18½	18½
Approximate wt., lbs...	12	13	14	15	16
Diameter, inches	1¾	1¾	1¾	1¾	1¾
Length, inches	19¾	21½	22½	24½	25½

Lowest market prices quoted upon application, on account of changes in market, on iron.

SASH CHAIN



No.	Sash Chain	Style	For Sash Weighing	Price per foot
A	"Giant" Metal (phosphor bronze)	Not over 400 lbs.	.....	\$0.15
1	"Giant" Metal (phosphor bronze)	Not over 275 lbs.	.....	.12
2	"Giant" Metal (phosphor bronze)	Not over 175 lbs.	.....	.10
0	"Giant" Metal (phosphor bronze)	Not over 125 lbs.	.....	.08
A	"Red Metal" (red bronze)	Not over 300 lbs.	.....	.13
1	"Red Metal" (red bronze)	Not over 225 lbs.	.....	.10
2	"Red Metal" (red bronze)	Not over 150 lbs.	.....	.08
0	"Red Metal" (red bronze)	Not over 100 lbs.	.....	.06
A	*Steel, Plain	Not over 400 lbs.	.....	.11
1	*Steel, Plain	Not over 250 lbs.	.....	.08
2	*Steel, Plain	Not over 150 lbs.	.....	.06
0	*Steel, Plain	Not over 100 lbs.	.....	.04
A	Steel, Sherardized or galvanized	Not over 400 lbs.	.....	.12
1	Steel, Sherardized or galvanized	Not over 250 lbs.	.....	.09
2	Steel, Sherardized or galvanized	Not over 150 lbs.	.....	.07
0	Steel, Sherardized or galvanized	Not over 100 lbs.	.....	.05

*Copper plated at \$0.30 per 100 feet extra.

FOR SASH AND CHECK WEIGHTS, SEE INDEX

SASH PULLEYS—SPEAKING TUBE

GARDNER SASH PULLEYS
2-INCH POLISHED CAST IRON WHEEL

Furnished in Morris Style M Case.

Fig. 740
Morris
Case,
Style M

No.	Size of Face	FINISH	List Price per dozen
40	1½ x 4½	Plain Face.....	\$0.40
41	1½ x 4½	Plain Face, Lacquered....	.46
42	1½ x 4½	Polished and Lacquered...	.56
45	1x4½	Plain Face.....	.40
46	1x4½	Plain Face, Lacquered....	.46
47	1x4½	Polished and Lacquered...	.56
65	1½ x 5	Plain Face.....	.50
66	1½ x 5	Plain Face, Lacquered....	.56
67	1½ x 5	Polished and Lacquered...	.65

Fig. 710
Gardner
Case,
Style G

2½-INCH POLISHED WHEEL

Furnished in either Gardner Style G or Morris Style M Case.

No.	No.	Size		Price No. 710	Price No. 740
710	740	1½ x 5	Plain Face.....	\$0.54	\$0.62
710-L	740-L	1½ x 5	Plain Face, Lacquered.....	.60	.70
711	741	1½ x 5	Polished and Lacquered.....	.70	.80
712	742	1½ x 5	Polished, Bronze Plated.....	1.20	1.35
716	746	1½ x 5	Bronze Metal Face.....	1.35	1.50
781	791	1½ x 5½	Polished and Lacquered.....	.90	1.00
786	796	1½ x 5½	Bronze Metal Face.....	1.90	2.00
811	841	1½ x 5¾	Polished and Lacquered.....	.90	1.00
816	846	1½ x 5¾	Bronze Metal Face.....	1.90	2.00
861	911	1½ x 5¼	Polished and Lacquered.....	.85	.95
866	916	1½ x 5¼	Bronze Metal Face.....	1.75	1.90

For roller bearing, add to list.....	\$0.35
For gun metal pins, add to list.....	.35
For boxes and screws, add to list.....	.10
For screws, add to list (Screws not included unless ordered).....	.06
For turned wheels, add to list.....	.15

When ordering pulleys, always give style of case and wheel desired.

Can furnish pulleys in any desired finish.

Plain face pulleys packed 100 doz. in a barrel.

Finished face pulleys packed 1 doz. in a package, 100 doz. in a barrel.

Bronze metal face pulleys packed 1 doz. in a package.

LOCK-SEAM SPEAKING TUBE



Made of best coke and terne plate, lock seamed throughout its entire length.

Put up in 5 ft. lengths. Crated, 1,000 ft. to the crate.

Per 1,000 ft. \$20.00



One inch round crimped tin Speaking Tube Elbows.....per doz. \$0.75

SLIDING DOOR EQUIPMENT

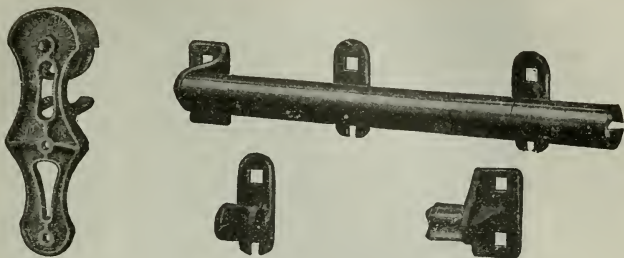


Fig. 1010

ROUND TRACK HANGERS

This Hanger has all the advantages of any swingout or other style of hanger, with none of the weak points. Hanger Frame is made of thoroughly annealed malleable iron of one solid piece, ribbed and reinforced, with no bolts or rivets to break or become loose. The Wheel, with perfectly grooved tread, has hardened steel axle, washers and roller bearings packed in the highest grade graphite lubricant, making the hanger absolutely anti-friction and very durable.

The Track is made in lengths of six, eight or ten feet. It is a high carbon, heavy round steel tube, with a $\frac{3}{4}$ inch slot in the back to allow insertion of track brackets. This shape makes it stronger and more rigid than other styles of track and always allows a perfect bearing for the wheel, with no side friction. Brackets are malleable iron, fitting inside of track tightly, and may be spaced to meet any requirements. One center bracket is used to connect two lengths or sections of track, making the joint as strong as any other part of the track.

Hanger, Track and Track Brackets finished in durable black enamel, baked on.

No.	Description	Shipping Wt., lbs.	List Prices
14	Barn Door Hangers .....per doz. pairs	100	\$19.20
14	Barn Door Track, with brackets every 2 ft.....per 100 ft.	114%	14.00
3	Warehouse Door Hangers.....per pr.	20	4.20
6	Double Adjustable Warehouse Door Hangers (Illustrated below).....per pr.	30	6.00
3	Track, with brackets every 2 ft., for use with No. 3 or 6 Hngs.....per 100 ft.	225	30.00
7	Track, with brackets every 2 ft., for use with No. 3 or 6 Hngs.....per 100 ft.	269	45.00

BARN DOOR STAY ROLLER AND BINDERS

Fig. 57. Steel Stay Rollers, reversible and adjustable for doors $1\frac{1}{2}$ to 3 inches thick. Weight per doz. $19\frac{1}{2}$ lbs.

Price per doz. \$2.50

Fig. 59. Steel Stay Rollers, with 10 inch wall strap, reversible and adjustable for doors $1\frac{1}{2}$ to 3 inches thick. Weight per doz. 33 lbs.

Price per doz. \$5.00

Fig. 367. Made of thoroughly annealed, non-breakable malleable iron, japanned, 7 inches wide by 3 inches high by 6 inches deep. Wheel $3\frac{1}{2}$ inches in diameter. Has slotted holes for $\frac{3}{4}$ inch bolts and is generally applied with three $\frac{3}{4}$ by $3\frac{1}{2}$ inch lag screws. Weight each, $3\frac{1}{4}$ lbs.

List price each.....\$0.80

BARN DOOR BINDER

Fig. 173. A combined bumper and binder, serving to stop the door and hold it against the building. Two or more should be used with every sliding door. It also serves as a substantial bar staple for locking swinging doors, in which case two or more are used.

Made of wrought steel. Width, $1\frac{1}{2}$ inches; length, 8 inches. Standard finish, black japanned; galvanized finish furnished at extra charge.

Packed one dozen in box without screws or bolts. Shipping weight 13 lbs.

List price per dozen.....\$1.50



Fig. 6



Fig. 57



Fig. 173



Fig. 367

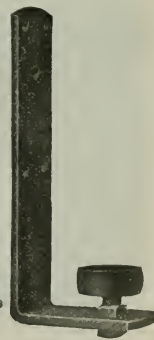


Fig. 59

FOR BOLTS, LAG SCREWS, HINGES, LOCKS, ETC., SEE INDEX

FIRE DOOR HARDWARE AND HANGERS



Fig. 500. Inclined Track Automatic Closing Device

SLIDING FIRE DOOR HARDWARE

Fig. No. 500 represents the most reliable and effective automatic closing feature yet devised. It has two links, one placed over the opening, the other in the opening, the fusing of either instantly releasing the door.

Blue Prints and Special Information Promptly Furnished

No.	Description	Shipping Wt., lbs.	List Prices
3	Rigid Hangers, per pair.	20	\$ 4.20
6	Double Adjustable Hangers, per pair.	30	6.00
	Door for opening over 6 feet wide requires 1½ pairs hangers		
3	Track with brackets, per 100 feet.	225	30.00
	Track required is twice opening width plus one foot.		
500	Fixtures (not including hangers and track), per set.	87½	13.50
500A	Fixtures, including all parts furnished with No. 500 except Nos. 313, 314, 375 and 376 parts.	69	11.00

Fixture sets include all necessary counterbalance weight, wall bolt washers, and bolts and screws for attaching parts to door, but wall bolts are not included.

Standard finish, black japanned; galvanized finish furnished at extra charge.

ROUND TREAD WATERSHED DOOR HANGER

An unusual door hanger in that it is bird, ice, snow, dirt, rust, rain and weight proof. It is simple in design and strong, being made from one steel blank without rivets or welds. Secured rigidly to the building with three bolts and nails spaced every six inches; center brackets are eliminated and the stress evenly distributed throughout the entire track length. Because of the cylindrical wheel tread and watershed expansion, the tandem type hangers operate with least possible friction. No service too hard. No door too heavy or too large. The only perfect watershed providing the swingout feature by the frictionless tilting of the hanger wheels on the rounded tread of the track. Allows 4½ foot swingout on a 9 foot opening.

No. 1010. Single Adjustable Hangers, japanned, shipping wt., 116 lbs. per doz. pairs \$24.00

No. 1012. Double Adjustable Hangers, japanned, shipping wt., 120 lbs. per doz. pairs 26.00

No. 1010. Track, japanned, shipping wt., 240 lbs. per 100 ft. 24.00



Fig. 1010
FOR BOLTS, LAG SCREWS AND EXPANSION SHIELDS, SEE INDEX

GARAGE HARDWARE

GARAGE DOOR SET

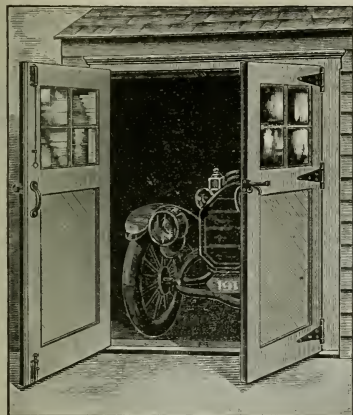


Fig. 1776

Put up in handy packages for your shelves. Saves time and labor. Size of box, $12\frac{3}{4} \times 7\frac{1}{4} \times 2\frac{7}{8}$ inches. Gross weight, 20 lbs. Each item is wrapped separately and screws of proper size and finish are included.

No. 1776-J1. Japanned finish. per set \$3.70

EXTRA HEAVY WROUGHT STEEL GARAGE HINGES

Corrugated

WITH BALL-BEARING WASHERS

No. 1458. With $1\frac{1}{8}$ inch offset for wood.

No. 1459. With $2\frac{1}{4}$ inch offset for brick and concrete.

These Hinges Permit Closing Doors Tightly, Which is Impossible with Hangers

Length of hinges from center of joint, 56 inches.

Gauge of metal, .203.

Width of long strap at joint, 4 inches; at end, 2 inches.

Width of pad on 1458, $2\frac{3}{4}$ inches.

Countersunk for No. 20 wood screws, and with combination holes, to take $\frac{3}{4}$ inch lag screws or carriage bolts on the strap.

Packed one pair in a package with 2x20 wood screws.

We shall deliver when ordered $\frac{3}{4} \times 3\frac{1}{2}$ inch carriage bolts for the strap, and 2x20 wood screws, or $\frac{3}{4} \times 2$ inch lag screws for the pad. Made right and left hand.

The corrugation adds to the strength and appearance of the Hinges.

By the use of the B.B. washers all friction in the joint is practically overcome, so that there can be no wearing down of the butt under the severest strain, no creaking of the door and no need of oiling the butt, thereby disfiguring finishes and gathering dust. The door swings easily and noiselessly. The washers are so constructed that they cannot come apart, and the improved brass cap protects the balls from moisture and dust. The hardened tool steel balls are set in a case-hardened raceway, and each bearing will sustain a load of 1,000 lbs. without crushing.

Nos. 1458-1459. Finish, plain steel, without screws. per pair \$ 6.60

Nos. 1458J-1459J. Finish, japanned, with screws. per pair 6.30

Nos. 1458Z-1459Z. Finish, Stanley Sherardized, with screws. per doz. 10.50

FOR MECHANICS TOOLS, SEE INDEX

ALLIGATOR BARN DOOR LATCH

MALLEABLE

REVERSIBLE



Fig. 35

The best and most popular Snap Latch on the market. It has every advantage of durability possible, closes and latches doors with the minimum effort, is not affected by warping or sagging of doors. Padlock may be snapped through latch, making a perfect lock.

Can be opened from either side of the door.

Reversible for either right or left hand doors.

Length of latch bar, $4\frac{1}{2}$ inches.

No. 35. Barn Door Latches, japanned, weight, 16 lbs. per dozen \$5.00



Fig. 1458

CASTERS



Fig. 8

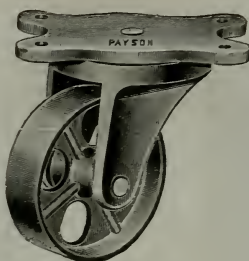


Fig. 103

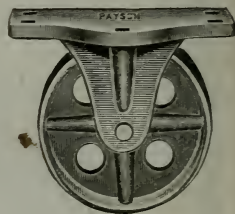


Fig. 211

Fig. 8 STATIONARY TRUCK CASTERS

This Series to match Anti-Friction Casters shown on next page.
To designate Rubber Wheels, add $\frac{1}{2}$ to the Iron number, thus: 8 $\frac{1}{2}$.

LIST PRICE PER SET OF FOUR

No.	Wheel Dia. Face	Plate	Template	Height	Iron Wheels	Roller Bearing Wheels	Use with Anti- Friction No.
8	2 $\frac{1}{4}$ —1 $\frac{1}{4}$	4 $\frac{1}{4}$ x 2	1 $\frac{1}{2}$ —3 $\frac{1}{4}$	3 $\frac{1}{2}$	\$ 2.35	\$ 5.20	188
10	3 $\frac{1}{4}$ —1 $\frac{3}{8}$	5 x 2 $\frac{3}{8}$	1 $\frac{1}{4}$ —3 $\frac{1}{8}$	4 $\frac{1}{2}$	3.05	6.00	190
10S	4 $\frac{1}{8}$ —1 $\frac{3}{8}$	5 x 2 $\frac{3}{8}$	1 $\frac{1}{4}$ —3 $\frac{1}{8}$	5	3.45	6.60	
11	5—1 $\frac{3}{8}$	6 $\frac{1}{2}$ x 2 $\frac{1}{2}$		6	7.50	10.80	192
11S	4—2 $\frac{1}{4}$	6 $\frac{1}{2}$ x 4	2 $\frac{1}{2}$ —5	6	10.00	13.15	192
12	5—1 $\frac{1}{2}$	7 $\frac{1}{2}$ x 2 $\frac{3}{4}$	1 $\frac{1}{2}$ —6 $\frac{1}{2}$	6	10.00	13.30	192
15	3 $\frac{1}{2}$ —1 $\frac{1}{2}$	3 $\frac{3}{4}$ x 3 $\frac{1}{4}$	2 $\frac{3}{4}$ —2 $\frac{3}{4}$	4 $\frac{1}{2}$	5.00	8.15	
9	5—1 $\frac{1}{2}$	5 $\frac{3}{4}$ x 3 $\frac{1}{4}$	2 $\frac{3}{4}$ —4 $\frac{5}{8}$	5 $\frac{3}{4}$	6.00	9.30	

Fig. 103 BALL BEARING TRUCK CASTERS

To designate Rubber Wheels, add "R" to Iron number, thus: 107R.

To designate Roller Bearing Wheels, state definitely what is wanted.

Carefully designed to give the greatest strength with the greatest ease in action. Furnished with hardened steel balls.

LIST PRICE PER SET OF FOUR

No.	Wheel Dia. Face	Plate	Template	Height	Capacity Iron per set of Four, lbs.	Iron Wheel	Roller Bearing Wheel	Rubber Wheel
103	2 $\frac{1}{4}$ —1 $\frac{1}{4}$	2 $\frac{1}{4}$ x 3	1 $\frac{1}{2}$ —3 $\frac{1}{4}$	3	1600	\$ 3.40	\$ 5.65	\$ 8.50
104	2 $\frac{1}{2}$ —1	3 $\frac{1}{2}$ x 1 $\frac{1}{4}$	2 $\frac{3}{8}$ —3 $\frac{1}{4}$	3 $\frac{3}{4}$	2000	4.00	6.25	10.25
105	3—1 $\frac{1}{8}$	3 $\frac{1}{2}$ x 1 $\frac{1}{4}$	2 $\frac{1}{2}$ —3 $\frac{1}{4}$	4 $\frac{1}{4}$	2500	4.60	6.95	12.60
105S	3—1 $\frac{1}{8}$	3 $\frac{1}{2}$ x 1 $\frac{1}{4}$	2 $\frac{1}{2}$ —3 $\frac{1}{4}$	4 $\frac{1}{4}$	3000	....	7.85	13.50
106S	3—1 $\frac{1}{8}$	3 $\frac{1}{2}$ x 1 $\frac{1}{4}$	2 $\frac{1}{2}$ —3 $\frac{1}{4}$	4 $\frac{1}{4}$	3000	....	8.10	13.75
106	4—1 $\frac{1}{8}$	3 $\frac{3}{4}$ x 1 $\frac{1}{4}$	2 $\frac{3}{4}$ —3 $\frac{1}{4}$	5 $\frac{1}{2}$	3000	6.40	8.30	19.40
107	5—1 $\frac{1}{2}$	4 $\frac{1}{4}$ x 6 $\frac{3}{4}$	3 $\frac{3}{4}$ —5 $\frac{1}{4}$	6 $\frac{1}{2}$	4000	12.20	14.85	25.70
107H	5—1 $\frac{1}{2}$	4 $\frac{1}{4}$ x 6 $\frac{3}{4}$	3 $\frac{3}{4}$ —5 $\frac{1}{4}$	6 $\frac{1}{2}$	5000	16.00	18.65	29.50
108	6—1 $\frac{3}{8}$	5 $\frac{1}{2}$ x 7 $\frac{1}{4}$	3 $\frac{1}{2}$ —5 $\frac{3}{4}$	8	5000	24.00	26.90	48.50

Fig. 211 STATIONARY TRUCK CASTERS

To designate Roller Bearing Wheels, state definitely what is wanted. Shipped in bulk.

LIST PRICE PER SET OF FOUR

No.	Wheel Dia. Face	Plate	Template	Height	Iron Wheels	Roller Bearing Wheels
211	2 — 3 $\frac{1}{4}$	2 $\frac{1}{4}$ x 3 $\frac{1}{2}$	2 $\frac{3}{8}$ —1 $\frac{1}{4}$	2 $\frac{3}{8}$	\$ 2.25	\$ 5.10
212	2 $\frac{1}{2}$ —1	2 $\frac{1}{2}$ x 3 $\frac{1}{2}$	2 $\frac{3}{8}$ —1 $\frac{1}{4}$	2 $\frac{3}{8}$	2.50	5.35
213	3 — 1 $\frac{1}{8}$	2 $\frac{3}{4}$ x 3 $\frac{1}{2}$	2 $\frac{3}{8}$ —1 $\frac{1}{4}$	3 $\frac{3}{8}$	3.10	6.05
213C	3 — 2	2 $\frac{3}{4}$ x 3 $\frac{1}{2}$	2 $\frac{3}{8}$ —1 $\frac{1}{4}$	3 $\frac{3}{8}$	4.70	7.95
214	4 — 1 $\frac{1}{8}$	3 $\frac{1}{2}$ x 4 $\frac{3}{4}$	3 $\frac{3}{8}$ —1 $\frac{1}{4}$	4 $\frac{3}{8}$	4.80	8.05
214B	4 — 2	4 $\frac{1}{4}$ x 4 $\frac{3}{4}$	1 $\frac{1}{2}$ —3 $\frac{3}{8}$ —1 $\frac{1}{4}$	4 $\frac{7}{8}$	6.50	9.85
215	5 — 1 $\frac{1}{4}$	4 x 5 $\frac{1}{4}$	1 $\frac{1}{2}$ —4 $\frac{1}{4}$ —1 $\frac{1}{8}$	6	7.50	10.85
216	6 — 1 $\frac{1}{2}$	5 x 7	2 $\frac{3}{8}$ —5 $\frac{1}{4}$ —1 $\frac{1}{8}$	6 $\frac{1}{2}$	12.50	16.15
217	7 — 2 $\frac{1}{4}$	5 $\frac{1}{2}$ x 7 $\frac{1}{2}$	2 $\frac{3}{8}$ —6 $\frac{1}{4}$ —1 $\frac{1}{8}$	8	17.50	21.46
218	8 — 2 $\frac{1}{2}$	6 $\frac{1}{4}$ x 8 $\frac{1}{2}$	2 $\frac{3}{8}$ —7 $\frac{1}{8}$ —2 $\frac{1}{8}$	9	21.50	25.75

FOR WOOD SCREWS, BOLTS, ETC., SEE INDEX

CASTERS

ANTI-FRICTION TRUCK CASTERS

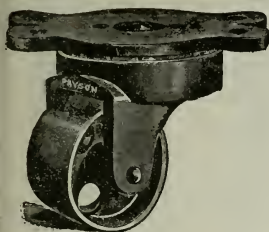


Fig. 188

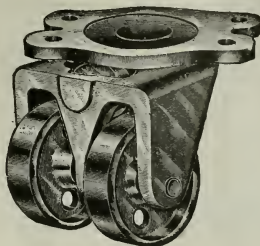


Fig. 22

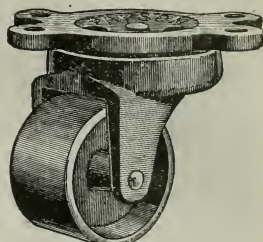


Fig. 184-186

To designate Roller Bearing Wheels state definitely what is wanted.

Fig. 188 LIST PRICES PER SET OF FOUR

No.	Wheels Diam.	Face	Plate	Template	Height	Capacity Iron per Set lbs.	Iron Wheels	Roller Bearing Wheels
188	2½	1½	3 x 4½	1½	3½	1000	\$ 2.75	\$ 5.65
188S	3¼	1½	3 x 4½	1½	3½	1000	3.50	6.50
190	3¼	1½	3½ x 4½	2½	3½	1500	4.00	7.00
190			2½ x 4½	2½	3½	1600	6.80	9.80
190H			2½ x 3½	2½	3½	2500	5.50	8.50
190W	3¼	2½	3½ x 4½	2½	3½	1500	7.00	10.00
190L	4½	1½	3½ x 4½	2½	3½	1200	5.00	8.15
190S	4½	1½	3½ x 4½	2½	3½	1200	6.50	9.75
191	3½	1½	3½ x 4½	2½	3½	1500	6.50	9.50
191L	5	1½	4½ x 5½	2½	4½	1200	12.00	15.35
191LA	5	1½	4 x 5½	2	4½	1800	16.00	19.35
192	4	2½	4½ x 6½	2½	4½	2000	12.00	15.35
193	5	2½	4½ x 6½	2½	4½	4000	17.50	20.85
193L	6	2½	5½ x 7	3½	5½	4000	25.00	28.65
195	6	3½	6½ x 9½	3½	7½	6000	45.00	48.65
197	8	4	8½ x 11½	5½	8½	32000	250.00	255.00

Fig. 22 DOUBLE WHEEL ANTI-FRICTION TRUCK CASTERS

LIST PRICES PER SET OF FOUR

Round Plate No.	Diam. of Plate	Oblong Plate No.	Wheel Diameter Face	Plate	Template	Height	Capacity Iron per Set lbs.	Iron Wheels
61	2½	62	1¾	¾	2½ x 3½	1½	1500	\$1.40
71	2½	72	2½	¾	2½ x 3½	1½	1500	1.50
81	3½	82	2½	¾	3½ x 4½	1½	2000	2.00
101	3½	102	3½	¾	3½ x 4½	1½	2500	2.50
		112	3½	¾	3½ x 5	2½	3000	3.75
		113	4	¾	4 x 5½	3½	3200	5.50
121	4½	122	4½	1½	4½ x 6½	2½	4000	7.00
		142	4½	1½	5½ x 7½	3½	5000	11.00

Fig. 184 CASTERS

Wheel, 1½ inches diameter by ¾ inch face.

Height, 2½ inches. Oblong plate, 1½x2½ inches. Capacity, 450 lbs.

LIST PRICE PER SET OF FOUR

Fig. 184.	Style 37 Iron	\$0.95
Fig. 184.	Style 37B Iron, broad wheel 1½ inch face	1.45
Fig. 184.	Style 0370 Hard Rubber	8.00

Fig. 186 CASTERS

Wheel, 2½ inches diameter by ¾ inch face. Height, 2½ inches. Oblong plate, 2½x3½ inches. Capacity, 600 lbs.

LIST PRICE PER SET OF FOUR

Fig. 186.	Style 37 Iron	\$ 1.25
Fig. 186.	Style 37B Ball Bearing Fibre	9.00
Fig. 186.	Style 0370 Hard Rubber	11.00

ASBESTOS BRAKE LINING

FOR STEAM, ELECTRIC OR GASOLINE ENGINE BRAKES AND CLUTCHES

(List Shows Prices per Lineal Foot)

Effective October 2, 1916



Fig. 6363

Width	Thickness, Inches					
	3/8	5/32	3/16	1/4	5/16	3/4
1 in.	.60	.75	.90	1.20	1.50	1.80
1 1/4 in.	.75	.95	1.15	1.50	1.90	2.25
1 1/2 in.	.90	1.15	1.35	1.80	2.25	2.70
1 3/4 in.	1.05	1.35	1.60	2.10	2.65	3.15
2 in.	1.20	1.50	1.80	2.40	3.00	3.60
2 1/4 in.	1.35	1.70	2.05	2.70	3.40	4.05
2 1/2 in.	1.50	1.90	2.25	3.00	3.75	4.50
2 3/4 in.	1.65	2.10	2.50	3.30	4.15	4.95
3 in.	1.80	2.25	2.70	3.60	4.50	5.40
3 1/4 in.	1.95	2.45	2.90	3.90	4.90	5.80
3 1/2 in.	2.10	2.60	3.15	4.20	5.25	6.30
3 3/4 in.	2.25	2.80	3.35	4.50	5.60	6.75
4 in.	2.40	3.00	3.60	4.80	6.00	7.20
4 1/4 in.	2.70	3.40	4.05	5.40	6.75	8.10
5 in.	3.00	3.75	4.50	6.00	7.50	9.00
5 1/2 in.	3.30	4.10	4.95	6.60	8.25	9.90
6 in.	3.60	4.50	5.40	7.20	9.00	10.80

Sizes indicated by bold faced type represent those sizes which have been approved by the Society of Automobile Engineers as Standard.

Any other sizes other than Standard must be considered as special.

TRAILERS



Fig. 33

Automobile trailers are being used more extensively by contractors every day, due to the ease with which material can be transported from one job to another. They can also be successfully used in bringing material to a job, where it would ordinarily be an item of considerable expense to transport it by a truck or by wagon.

THE CONTRACTOR'S SPECIAL

SPECIFICATIONS

Body—Rack style; 86 inches long, 42 inches wide, 16 inches deep inside; removable sides and ends.

Wheels—1 1/2 inch spoke, 34 inches high.

Axle—1 1/4 inch special high carbon steel; 1 1/2 inch spindle.

Springs—43 inches long, 1 1/2 inches wide, 6 plate, with extra heavy shackles and axle clips.

Draw-Bar—Heavy pole, reinforced with steel; adjustable to any height auto frame.

All-Way Coupling—Universal joint with shock-absorbing springs. Compact—durable—safe. Takes up all vibration from the car. Trailer can be instantly attached or detached from the car by removing one pin—no tools necessary.

Painting—Brewster green.

Attachments—Bracket fastens to frame of car—above the springs—taking advantage of full spring action from the car and removing all vibration from draw-bar and Trailer body.

Capacity—1200 pounds.

Weight—Crated, ready for shipment, 375 pounds.

Model 32—Extra heavy ball bearings; 1 1/4 inch steel tires.

Model 33—Extra heavy ball bearings; 1 1/2 inch solid rubber tires.

Model 34—Extra heavy ball bearings; 1 1/4 inch steel tires; 6 inch drop axle.

Model 35—Extra heavy ball bearings; 1 1/2 inch solid rubber tires; 6 inch drop axle.

EVERY TRAILER EQUIPPED WITH UNIVERSAL CONNECTION ROD

List Prices

Delivery Style of Body

Model 22—Box bearing, 1 1/4 inch solid rubber tire	\$45.00
Model 23—Ball bearing, 1 1/2 inch round edge steel tire	50.00
Model 24—Ball bearing, 1 1/2 inch solid rubber tire	57.00

Rack Style of Body

Model 32—Ball bearing, 1 1/4 inch round edge steel tire	\$67.00
Model 33—Ball bearing, 1 1/2 inch solid rubber tire	77.00
Model 34—Same as Model 32, with 6 inch drop axle	72.00
Model 35—Same as Model 33, with 6 inch drop axle	82.00

WE CARRY A COMPLETE STOCK OF AUTOMOBILE ACCESSORIES AND SUPPLIES

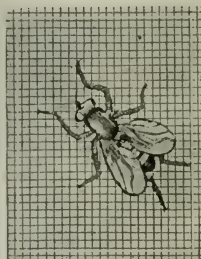
WINDOW SCREEN, WIRE CLOTH, PERF. SHEET BRASS

WINDOW SCREEN WIRE CLOTH

Black Painted Cloth is finished in the best jet black enamel paint, put on by a special process. The best materials obtainable are used, presenting a brilliant glossy surface. The paint will not flake off, a trouble too common with many brands.

Galvanized or White Metal Screen Wire Cloth is made from specially prepared Hot Galvanized wire.

Bronze Screen Wire Cloth is woven from the best grade of bronze wire, and has been especially prepared for the resistance of the action of salts, acids, gases and all kinds of atmospheric conditions. Made in both antique and Golden Bronze.



Roll of Window Screen Wire Cloth wrapped and labeled for shipment. Double Selvage

WINDOW SCREEN WIRE CLOTH

12 MESH

Stock sizes: 18 inches to 48 inches inclusive, even inches.

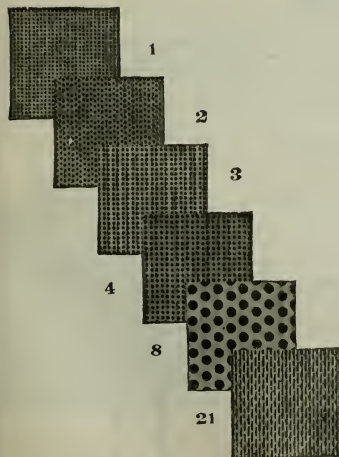
Black Painted Cloth, No. 33 and 34 Wire.....per 100 sq. ft. \$2.50
Galvanized Cloth, No. 33 and 34 Wire....." 3.30

For widths over 48 inches, \$0.50 per 100 sq. ft. advance and widths under 18 inches wide, \$0.10 per 100 sq. ft. advance over regular width.

14 MESH

Galvanized Cloth, No. 33 and 34 Wire.....per 100 sq. ft. \$3.80
Golden Bronze Cloth, No. 31 and 32 Wire....." 13.00

When ordering, always specify finish, width and mesh.



PERFORATED SHEET BRASS

We carry the perforations illustrated in stock in widths suitable for covering the different sizes of pipe.

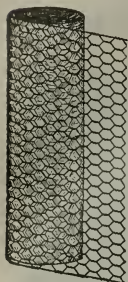
Price List

Width inches	For Size Pipe inches	Numbers 1, 2, 3, 4 per Lineal foot	Number 8 per Lineal foot	Number 21 per Lineal foot
4 3/8	1	\$0.20	\$0.14	\$0.30
5 5/16	1 1/4	.28	.18	.40
6 1/8	1 1/2	.30	.20	.50
7 5/8	2	.38	.25	.65
9 1/4	2 1/2	.44	.30	.75
11	3	.50	.35	.85
12	...	.55	.40	.90

Fig. 133. Cut One-Half Size

FOR WELL POINTS AND PUMPING OUTFITS, SEE INDEX

BAR BENDERS—CONCRETE REINFORCEMENTS



REINFORCING WIRE

Galvanized before Weaving
Galvanized after Weaving

In ordering specify width, size of mesh, gauge of wire and whether galvanized before or galvanized after weaving is wanted.

All widths, 12 to 72 inches.

In rolls of 150 lineal feet.

Special widths up to 96 inches to order without extra charge if ordered in lots of five rolls or over of each special width.

Fig. 611A

2	inch mesh, No. 15 wire.....	per sq. ft.	\$0.07 1/4
2	inch mesh, No. 16 wire.....	"	.05 1/2
2	inch mesh, No. 18 wire.....	"	.03 1/4
2	inch mesh, No. 19 wire.....	"	.02 1/2
2	inch mesh, No. 20 wire.....	"	.02 1/4
1 1/2	inch mesh, No. 18 wire.....	"	.04 1/2
1 1/2	inch mesh, No. 19 wire.....	"	.03 1/2
1 1/2	inch mesh, No. 20 wire.....	"	.03
1	inch mesh, No. 19 wire.....	"	.06 1/2
1	inch mesh, No. 20 wire.....	"	.05 1/2
3/4	inch mesh, No. 19 wire.....	"	.10 3/4
3/4	inch mesh, No. 20 wire.....	"	.09

METAL LATH

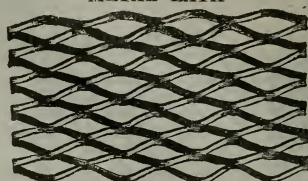


Fig. 611B

Price governed by market conditions. On application.

STEEL BARS FOR REINFORCED CONCRETE



Fig. 611C

Round, plain and twisted square bars of high tensile strength.

Price governed by market conditions. On application.

CARPENTER'S "WATERLOO" REINFORCING BAR BENDING MACHINE



Fig. 611D

A durable, substantially constructed machine so arranged to bend reinforcing bars to various angles for all purposes in concrete work. The bending posts are constructed of turned steel. The post revolving through the slot in the plate, being equipped with loose steel roller to avoid creeping of bar in bending.

The machines are furnished with a detachable handle seven feet long for convenience in handling. Bars can be bent to a more uniform angle than by any other method and get the maximum strength as designed by the engineer.

Made in two sizes. Guaranteed to bend bars as follows:

No. 2	bends cold reinforcing bars including 1 1/2 inch, round or square.	
No. 3	bends cold reinforcing bars including 1 1/4 inch, round or square.	
No. 2	Bar Bending Machine, without stand, weight 110 lbs.	\$18.00
No. 3	Bar Bending Machine, without stand, weight 210 lbs.	23.00
No. 2	Bar Bending Machine, with steel stand, weight 200 lbs.	28.00
No. 3	Bar Bending Machine, with steel stand, weight 300 lbs.	33.00

SLEEPER CLIPS

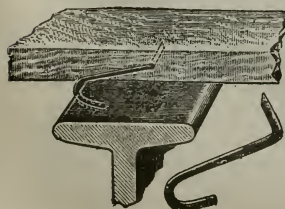


Fig. 612A

Fasten wood sleepers to I-beams. Drives like a nail. Saves time and labor.

Prevents buckling and warping of wooden sleepers, insuring smooth and solid floors.

Applied quickly. Hook form and U form in the following:

2 1/4	inch, 25 lbs.	per 1000	\$....
3 1/4	inch, 30 lbs.	per 1000	"....
4 1/4	inch, 35 lbs.	per 1000	ECB
5 1/4	inch, 42 lbs.	per 1000	L I B
6 1/4	inch, 50 lbs.	per 1000	....

Used by all the large contractors and in the most modern up-to-date buildings. Special sizes and longer lengths to order. Prices quoted on application.

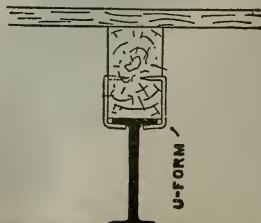
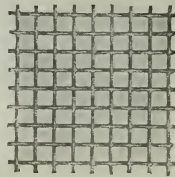
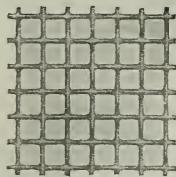
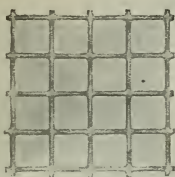
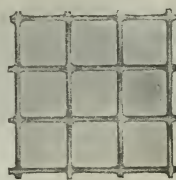
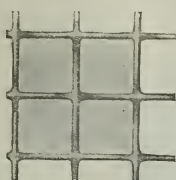
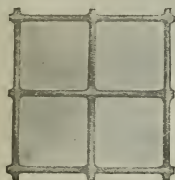


Fig. 612B

WIRE CLOTH, SCREENING AND NETTING

In ordering Wire Cloth always specify the mesh, size of wire, width and quantity desired.



Above, Fig. 487A, 2x2 Inch Mesh
Below, Fig. 487D, 4x4 Inch Mesh

Above, Fig. 487B, 2 1/2 x 2 1/2 Inch Mesh
Below, Fig. 487E, 6x6 Inch Mesh

Above, Fig. 487C, 3x3 Inch Mesh
Below, Fig. 487F, 8x8 Inch Mesh

These Cuts are Actual Size

Stock Widths. 24 Inches, 30 Inches, 36 Inches, 42 Inches, 48 Inches

Full Rolls Contain 100 Lineal Feet

Cut Pieces Cannot Be Returned

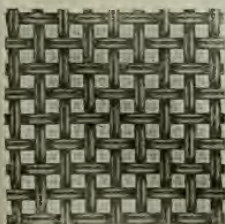
2	x2	inch mesh, No. 19 wire.....	per 100 sq. ft.	\$7.40
2 1/2	x2 1/2	inch mesh, No. 20 wire.....	"	7.40
3	x3	inch mesh, No. 21 wire.....	"	7.40
4	x4	inch mesh, No. 23 wire.....	"	7.90
6	x6	inch mesh, No. 25 wire.....	"	8.40
8	x8	inch mesh, No. 27 wire.....	"	9.40

HEAVY GRADE WIRE CLOTH

GALVANIZED AFTER WEAVING

Stock Widths: 24 Inches, 30 Inches, 36 Inches, 42 Inches, 48 Inches

1	x1	inch mesh, No. 11 wire.....	per sq. ft.	\$0.17
1	x1	inch mesh, No. 13 wire.....	"	.12
1 1/2	x 3/4	inch mesh, No. 12 wire.....	"	.17
2	x2	inch mesh, No. 14 wire.....	"	.17
2	x2	inch mesh, No. 16 wire.....	"	.12
3	x3	inch mesh, No. 16 wire.....	"	.17
3	x3	inch mesh, No. 18 wire.....	"	.12
4	x4	inch mesh, No. 18 wire.....	"	.17
4	x4	inch mesh, No. 20 wire.....	"	.17
6	x6	inch mesh, No. 20 wire.....	"	.12
8	x8	inch mesh, No. 22 wire.....	"	.17



HEAVY GRADE PLAIN STEEL CLOTH

FOR STACK NETTING, HEAVY SCREENING, ETC.

Stock Widths: 36 Inches, 42 Inches, 48 Inches

Full Rolls Contain 100 Lineal Feet

			Per Square Foot
2	x2	inch mesh, 10 gauge wire.....	\$0.38
2 1/2	x2 1/2	inch mesh, 11 gauge wire.....	.38
3	x3	inch mesh, 12 gauge wire.....	.38
4	x4	inch mesh, 12 gauge wire.....	.60
4	x4	inch mesh, 14 gauge wire.....	.38
6	x6	inch mesh, 14 gauge wire.....	.60
6	x6	inch mesh, 16 gauge wire.....	.38
8	x8	inch mesh, 16 gauge wire.....	.60
8	x8	inch mesh, 18 gauge wire.....	.38

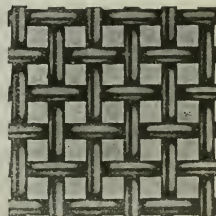


Fig. 487L 4 Mesh, No. 12 Steel

Fig. 487G. 6 Mesh, No. 14 Steel

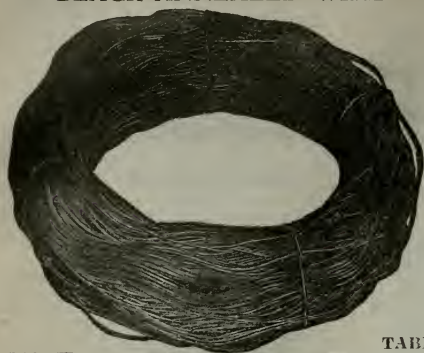
In addition to the meshes listed, we are prepared to furnish a large line of special meshes and wires, prices for which will be furnished on application.

Mesh—The number of openings per lineal inch, center to center of wire.

CONCRETE REINFORCEMENT SPECIALTIES

BLACK ANNEALED WIRE

Price List of Black Annealed Wire



Gauge No.	Black Advance per 100 lbs.	Galv. Advance Over Black per 100 lbs.
6 to 9	Base	\$0.30
1 to 4	\$0.25	.30
10	.05	.30
11	.10	.30
12 & 12½	.15	.30
13	.25	.30
14	.35	.30
15	.45	.60
16	.55	.60
17	.70	1.00
18	.85	1.00

ANNEALED STONE OR WEAVING WIRE



TABLE OF SIZES

FULL SIZES OF WIRE		Steel Wire Gauge No.	Sizes of Wires		Lbs. per foot	Feet to lb.
Steel wire Gauge			Common Fractions	Decimally		
●		1	$\frac{9}{32}$	.2830 .28125	.2136 .211	4.681
●		2	$\frac{1}{4}$	.2625 .250	.1838 .1667	5.441
●		3		.2437	.1584	6.313
●		4	$\frac{7}{32}$	.2253 .21875	.1354 .1276	7.386
●		5		.2070	.1143	8.750
●		6	$\frac{3}{16}$	.1920 .1875	.0983 .0937	10.17
●		7		.1770	.0835	11.97
●		8	$\frac{5}{16}$	.1620 .15625	.070 .0651	14.29
●		9		.1483	.0586	17.05
●		10	$\frac{1}{8}$	.1350 .1250	.0486 .0416	20.57
●		11		.1205	.0387	25.82
●		12	$\frac{3}{32}$	.1055 .09375	.0296 .0234	33.69
●		13		.0915	.0223	44.78
●		14		.0800	.0170	58.58
●		15		.0720	.0138	72.32
●		16	$\frac{1}{16}$	.0625	.0104	95.98
●		17		.0540	.0077	128.6
●		18		.0475	.006	166.2

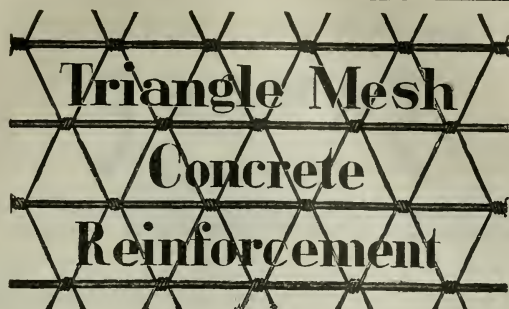
Use same list for galvanized and tinned stone wire.

No.	Price per lb.	Price per stone
16	\$0.14	\$1.68
17	.15	1.80
18	.16	1.92
19	.19	2.28
20	.20	2.40
21	.21	2.52
22	.22	2.64
23	.23	2.76
24	.24	2.88
25	.25	3.00
26	.26	3.12
27	.28	3.36
28	.29	3.48
29	.30	3.60
30	.32	3.84
31	.33	3.96
32	.35	4.20
33	.37	4.44
34	.40	4.80
35	.45	5.40
36	.55	6.60

EXTRA FINE SIZES STONE WIRE

Use same list for galvanized and tinned stone wire

No.	Price, per lb.
37	\$0.40
38	.45
39	.50
40	.55
41	.60
42	.65
43	.75
44	.85
45	1.00
46	1.15
47	1.40



FOR PAVEMENTS AND ROADWAYS

ALSO FOR

BUILDINGS, LEVEES, CANAL LOCKS, CHIMNEYS,
SEWER PIPE, VIADUCTS, RETAINING WALLS,
FLOOR SLABS, WALL SLABS, ROOF SLABS,
CONCRETE, SWELL BOXES FOR PIPE ORGANS, ETC.

TABLE No. 1

Longitudinals Spaced 4 Inches

Cross Wires Number 14 Gauge Spaced 4 Inches

Number and Gauge of Wires, Areas per Foot
Width and Weights per 100 Square Feet

Style No.	Number and Gauge of Wires, each Longitudinal American Steel & Wire Company's Steel Wire Gauge	Sectional Area Longitudinals Sq. In. per Ft. Width	Total Effective Longitudinal Sectional Area Sq. In. per Ft. Width	Approximate Wt. Lbs. per 100 Sq. Feet
032	1—No. 12 gauge	.026	.032	22
040	1—No. 11 gauge	.034	.040	25
049	1—No. 10 gauge	.043	.049	28
058	1—No. 9 gauge	.052	.058	32
068	1—No. 8 gauge	.062	.068	35
080	1—No. 7 gauge	.074	.080	40
093	1—No. 6 gauge	.087	.093	45
107	1—No. 5 gauge	.101	.107	50
126	1—No. 4 gauge	.120	.126	57
146	1—No. 3 gauge	.140	.146	65
153	1— $\frac{1}{4}$ inch	.147	.153	68
168	1—No. 2 gauge	.162	.168	74
180	2—No. 6 gauge	.174	.180	78
208	2—No. 5 gauge	.202	.208	89
245	2—No. 4 gauge	.239	.245	103
267	3—No. 6 gauge	.261	.267	111
287	3—No. 5 $\frac{1}{2}$ gauge	.281	.287	119
309	3—No. 5 gauge	.303	.309	128
336	3—No. 4 $\frac{1}{2}$ gauge	.330	.336	138
365	3—No. 4 gauge	.359	.365	149
395	3—No. 3 $\frac{1}{2}$ gauge	.389	.395	160

TABLE No. 2

Longitudinals Spaced 4 Inches

Cross Wires Number 14 Gauge Spaced 8 Inches

Number and Gauge of Wires, Areas per Foot
Width and Weights per 100 Square Feet

Style No.	Number and Gauge of Wires, each Longitudinal American Steel & Wire Company's Steel Wire Gauge	Effective Sectional Area of Cross Reinforcement Sq. In. per Ft. Width	Effective Longitudinal Sectional Area Sq. In. per Ft. Width	Approximate Wt. Lbs. per 100 Sq. Feet
036P	1—No. 12 gauge	.009	.036	17
044P	1—No. 11 gauge	.009	.044	20
053P	1—No. 10 gauge	.009	.053	24
062P	1—No. 9 gauge	.009	.062	27
072P	1—No. 8 gauge	.009	.072	31
084P	1—No. 7 gauge	.009	.084	35
097P	1—No. 6 gauge	.009	.097	40

TABLE No. 3

Longitudinals Spaced 4 Inches

Cross Wires Number 12 $\frac{1}{2}$ Gauge Spaced 8 Inches

Number and Gauge of Wires, Areas per Foot
Width and Weights per 100 Square Feet

Style No.	Number and Gauge of Wires, each Longitudinal American Steel & Wire Company's Steel Wire Gauge	Effective Sectional Area of Cross Reinforcement Sq. In. per Ft. Width	Effective Longitudinal Sectional Area Sq. In. per Ft. Width	Approximate Wt. Lbs. per 100 Sq. Feet
041R	1—No. 12 gauge	.014	.041	21
049R	1—No. 11 gauge	.014	.049	24
058R	1—No. 10 gauge	.014	.058	28
067R	1—No. 9 gauge	.014	.067	31
077R	1—No. 8 gauge	.014	.077	35
089R	1—No. 7 gauge	.014	.089	40
102R	1—No. 6 gauge	.014	.102	44

Length of rolls: 150 feet, 200 feet and 300 feet. Widths: Approximately 18 inches, 22 inches, 26 inches, 30 inches, 34 inches, 38 inches, 42 inches, 46 inches, 50 inches, 54 inches and 58 inches.

Elastic limit of regular stock from 50,000 to 60,000 lbs. per square inch, sectional area, 85,000 lbs. or over ultimate strength. Higher elastic limits and breaking strengths may be furnished when required.

*Note—Material may be furnished either plain or galvanized. Unless otherwise specified, shipments will be made of material not galvanized. Stock material usually carried in 150 foot rolls, and 42 inch, 50 inch and 58 inch widths.

*PRICE WILL BE QUOTED ON RECEIPT OF SPECIFICATIONS AND QUANTITY

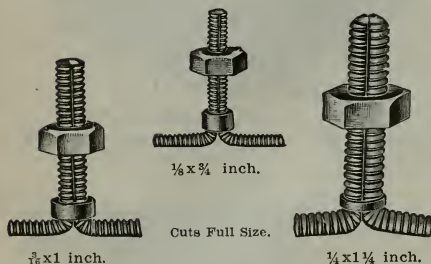
FASTENERS FOR SHEET METAL AND TILE

SAVAGE

SIAMESE TWIN BOLTS AND EYES

For Fastening Articles to Hollow Sheet Metal Construction

TWIN BOLTS



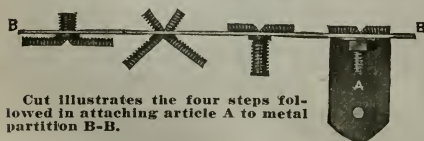
Prices per 100 for Steel Bolts with Hexagon Nuts, Galvanized

Length of Shank	Diameter of Bolts			
	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$
$\frac{3}{4}$	\$5.00	\$4.50	\$5.00	\$5.50
1	5.50	5.00	5.50	6.00
$1\frac{1}{4}$	6.00	5.50	6.00	6.50
$1\frac{1}{2}$	6.75	6.00	6.75	7.25
2	7.50	6.75	7.50	8.00
$2\frac{1}{2}$	8.25	7.50	8.25	8.75
3	9.00	8.25	9.00	9.50

Brass Bolts and Nuts made to order same sizes as above. List prices double those for Steel.

Prices for Ornamental Cap Nuts on application.

Method of Inserting Siamese Bolts



Cut illustrates the four steps followed in attaching article A to metal partition B-B.

TWIN EYES

MADE WITH
CLOSED
RING,
OPEN AND
CUT SIDES.



ADJUSTABLE
STOP ARMS
AND
CLAMPS

For fastening Awning, Rods, Wires, Suspended Lights, Show Cards, etc.

Price per 100 for Steel Eyes, Galvanized

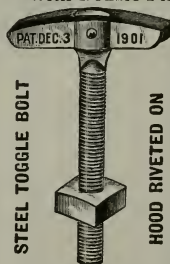
$\frac{1}{4}$ inch Eye Closed Ring	\$5.00
$\frac{1}{2}$ inch Eye Closed Ring	5.50
$\frac{1}{2}$ inch Eye Open or Cut Side	6.50

Brass Eyes made to order, same size as above.

List price double those for Steel.

STEEL TOGGLE BOLTS

With Double-Flanged Sides and Rigid Back



For securing brackets and fixtures to hollow tiling, marble slabs, steel ceilings or plastered walls where screws or nails fail to hold.

The $\frac{3}{8}$ inch size, as shown above, can be pushed through a $\frac{3}{4}$ inch hole and instantly securely anchors itself.

By turning it half way around it will come out, or by pushing it up it will drop out.

Length of Screw inches	Diameter of Screw, inches						
	5/32	3/16	1/4	5/16	3/8	7/16	1/2
$2\frac{1}{2}$	...	3.30	5.00	...	...	...	...
3	\$3.30	...	5.00	6.50	7.50	...	...
$3\frac{1}{2}$	...	3.30	5.30	...	...	...	...
4	3.30	3.30	5.50	7.00	8.00	10.50	12.00
5	...	3.60	5.70	7.50	8.50	11.00	12.50
6	...	3.80	6.00	8.00	9.00	11.50	13.00

The above are stock sizes; special sizes furnished to order.

Siamese Twin Bolts and Eyes are simple, effective, reliable. For use on construction that is inaccessible from the rear and where the head of the bolt cannot be secured. They serve to fasten window shades, awning brackets and hoods, signs, ornaments, hooks, electrical devices, etc., to hollow metal, metal sash, frames and door trim, skylights, ceilings, wainscoting, etc.

CONCRETE INSERTS—CONCRETE PIPE DRILLS

CONCRETE INSERTS

Fasten to the Form—Then Pour the Concrete

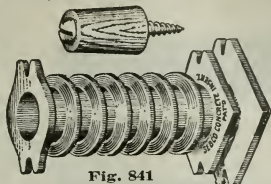


Fig. 841

Made in two styles—

For use with regular Machine Bolts and Machine Screws, or with Lag Screws and Wood Screws. The Insert consists of a malleable iron Anchor, with corrugations formed to firmly engage the concrete, and threaded for either bolts or screws, and a wooden plug used for attaching the Insert to the forms.

To Use: Fasten the wooden plug to the form with a nail or a screw, then press the Insert over the plug, thus securely and accurately attaching it to the form. After the concrete has been poured and the forms removed, the Insert is ready for use. The wooden plug comes away with the form, leaving a neat finish and a clean entrance into the Insert for a bolt or screw. If preferred, the Insert may be fastened to the form without using the wooden plug; they may be nailed or tacked through the lugs provided at the top flange and base.

List Price per Hundred with Screws or Bolts

Length inches	Diameter of Screw or Bolt							
	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4
1 1/4	11.00	12.70	.....	.....	.....	.....	.....	.....
2	11.10	12.90	.....	.....	.....	.....	.....	.....
2 1/2	11.20	13.10	14.20	17.00	.....	.....	.....	.....
3	11.30	13.50	14.40	17.50	20.20	25.60	26.60	34.70
4	11.40	14.00	14.80	18.20	20.80	26.50	27.50	35.70
5	.....	14.40	15.20	19.00	21.40	27.30	28.30	36.70
6	.....	.....	15.60	19.60	22.10	28.30	29.30	37.70
7	.....	.....	.....	20.30	22.70	29.20	30.20	38.70
8	.....	.....	.....	21.00	23.30	30.10	31.10	39.70
Inserts only	9.00	10.00	11.00	13.00	15.00	18.00	19.00	26.00

Length of Insert, in.	1 1/2	2	2	2	2 1/2	2 1/2	2 1/2	3
Number in Box	100	100	100	50	50	50	50	25
Shipping Wt. per 100....	10	10	18	19	26	30	33	54

Fig. 841B ADJUSTING FIXTURE FOR USE WITH INSERTS

While Inserts can be placed with absolute accuracy, making adjustment unnecessary, occasion may arise where through carelessness or otherwise, adjustment is required and for this purpose the above fixture will be found satisfactory, easy to place and will make a neat finish.

List Price per Hundred

Size	3/4	7/16	1/2	5/8	3/4
Price	\$7.00	\$7.00	\$8.00	\$10.00	\$12.00

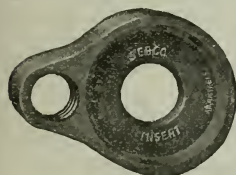


Fig. 841B

Fig. 841C PIPE DRILLS

The drill heads are threaded to fit any gas pipe, which serves as a handle. The heads are of the strongest, yet lightest construction, making them ideal for carrying in a tool kit. Quite a range of sizes can be so carried as they weigh practically nothing.

Sizes and List Prices—Drill Heads Only

Number	Diam. of Cutting Edge	Size Pipe for Handle	Shipping wt. per doz.	Per dozen
No. 2	5/8 inch	1 1/8 inch	1 lb.	\$3.00
No. 3	3/4 inch	1 1/4 inch	1 lb.	3.00
No. 4	1 1/8 inch	1 1/2 inch	1 lb.	3.00
No. 5	1 1/4 inch	1 3/4 inch	1 lb.	3.00
No. 5a	1 1/4 inch	1 1/2 inch	1 1/4 lb.	3.60
No. 6	1 1/2 inch	2 inch	1 3/4 lb.	4.20
No. 6a	1 3/8 inch	1 3/4 inch	2 1/2 lb.	7.50
No. 7	1 1/2 inch	2 1/4 inch	3 1/4 lb.	9.00
No. 7a	1 3/4 inch	1 inch	5 lb.	10.50
No. 8	2 inch	1 inch	6 lb.	12.00
No. 9	2 1/4 inch	1 inch	7 1/2 lb.	15.00
No. 9a	2 1/2 inch	1 inch	11 lb.	22.00
No. 10	2 3/4 inch	1 inch	12 lb.	27.00
No. 10a	3 inch	1 inch	12 lb.	31.00
No. 11	3 1/4 inch	1 1/4 inch	12 lb.	36.00
No. 11a	3 1/2 inch	1 1/2 inch	13 lb.	40.00
No. 11b	3 3/4 inch	1 1/4 inch	18 lb.	44.00
No. 12	4 inch	1 3/4 inch	21 lb.	48.00

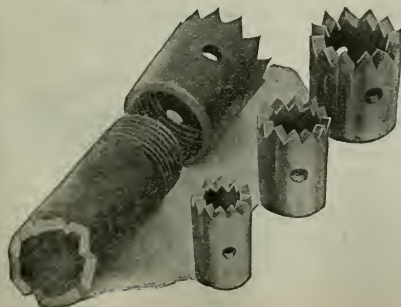


Fig. 841C

WALL TIES, BRICK BONDS AND WALL ANCHORS

Every brick wall should be reinforced and tied by means of a wall tie. The cost is slight and the benefit derived is very great in the construction of the wall.



Fig. 18A. Ideal Crimped Galvanized Wall Tie



Fig. 18B. Ideal Corrugated Galvanized Wall Tie

Figs. 18A and 18B Ideal flat crimped or the corrugated wall ties are made of galvanized metal and are 6½ inches long. The deep crimp or corrugations make these ties a perfect bond for the wall.

Holes are punched in the end so the tie can be bent up if desired and used for veneer work.

1000 Wall Ties packed in box.

Per M \$2.20
(There are 1000 Wall Ties to a box)

5000 Wall Ties packed in bulk.
Per M \$2.00
(A barrel contains about 5000 Wall Ties)

GENUINE HERRINGBONE WALL TIES

Heavy Gauge

Fig. 18C Genuine Herringbone Wall Ties, heavy gauge, size 7 inches long, ⅞ inch wide, heavily galvanized, not punched.

1000 Wall Ties packed in box. Per M. \$4.00



Fig. 18C. Herringbone Wall Ties

WALL ANCHORS



Fig. 15N. Flat Strap Anchor

Length, inches..	12	15	18	24	30
Size 1¼ x ⅜	\$0.06	.07	.08	.10	.12
Size 1½ x ⅜ .....	.07	.08	.09	.11	.14
Size 1¾ x ⅜ .....	.08	.09	.10	.13	.16



Fig. 15X. Wall Anchors, One End Turned Up

Length, inches..	12	15	18	24	30
Size 1¼ x ⅜	\$0.08	.09	.10	.12	.14
Size 1½ x ⅜ .....	.09	.10	.11	.13	.16
Size 1¾ x ⅜ .....	.10	.11	.12	.15	.19



Fig. 15R. Wall Anchors, One End Turned Up and One Down

Length, inches..	12	15	18	24	30
Size 1¼ x ⅜	\$0.10	.11	.12	.14	.16
Size 1½ x ⅜ .....	.11	.12	.13	.15	.18
Size 1¾ x ⅜ .....	.12	.13	.14	.17	.21



Fig. 15P. Wall Anchors, One End Turned Up and Split

Length, inches..	12	15	18	24	30
Size 1¼ x ⅜	\$0.11	.12	.13	.15	.17
Size 1½ x ⅜ .....	.12	.13	.14	.16	.19
Size 1¾ x ⅜ .....	.13	.14	.15	.18	.21



Fig. 15Y. Stone Anchor

Length, inches.....	6	8	10	12
Size 1 x ⅜	\$0.07	.08	.09	.10

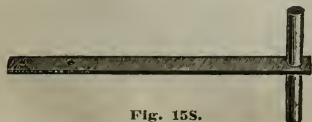


Fig. 15S.

PIN ANCHORS

The most practical, easy-to-apply anchor on the market. Standard size is 1x3/16x14 inches. These anchors are used in large quantities on nearly every brick job that goes up. We are prepared to make up on short notice, any quantity or size. Prices quoted upon receipt of specifications, being based upon market prices of iron, and quantity ordered.

JOIST HANGERS, INSERTS AND CLAMPS

Pat. applied for.

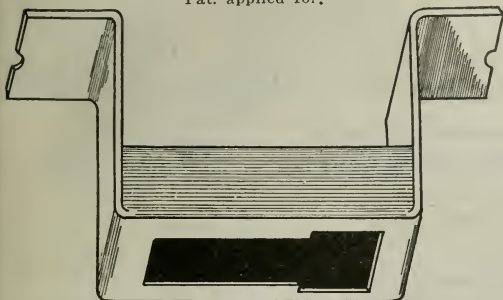


Fig. 19A
(Slotted to allow bolt adjustment)

IDEAL CONCRETE INSERT

Made of pressed steel and forms the best insert for attaching shaft hangers, sprinkler systems and other fixtures to concrete ceilings, slabs, walls, etc.

Set on the forms before pouring the concrete. Nail holes are provided in the arms so the insert can be fastened securely to the form. The concrete flows entirely around the insert, leaving the slotted opening at the bottom flush with the surface of the concrete.

The slotted hole allows full adjustment of the bolt.

Inserts carried in stock for $\frac{1}{2}$, $\frac{5}{8}$ and $\frac{3}{4}$ inch bolts.

List Prices

Ideal Adjustable Insert for $\frac{1}{2}$ inch bolt.....	\$0.11
Ideal Adjustable Insert for $\frac{5}{8}$ inch bolt.....	.13
Ideal Adjustable Insert for $\frac{3}{4}$ inch bolt.....	.15

SPECIAL LIGHT WEIGHT JOIST HANGER

Especially adapted for light construction work.

Size	Price
Hanger to carry 2x 6 inch joist.....	\$0.12
Hanger to carry 2x 8 inch joist.....	.14
Hanger to carry 2x10 inch joist.....	.18
Hanger to carry 2x12 inch joist.....	.20
Hanger to carry 2x14 inch joist.....	.26
Hanger to carry 3x 6 inch joist.....	.16
Hanger to carry 3x 8 inch joist.....	.18
Hanger to carry 3x10 inch joist.....	.24
Hanger to carry 3x12 inch joist.....	.32
Hanger to carry 4x 6 inch joist.....	.24
Hanger to carry 4x 8 inch joist.....	.28
Hanger to carry 4x10 inch joist.....	.30
Hanger to carry 4x12 inch joist.....	.34
Hanger to carry 4x14 inch joist.....	.46
Hanger to carry 4x16 inch joist.....	.60
Hanger to carry 6x10 inch joist.....	.58
Hanger to carry 6x12 inch joist.....	.64
Hanger to carry 6x14 inch joist.....	.76

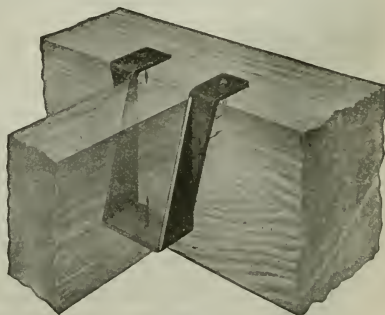


Fig. 21A

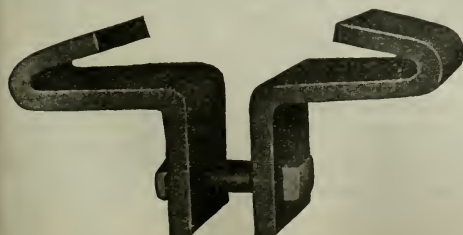
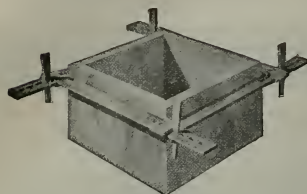


Fig. 42

I-BEAM CLAMPS

These clamps are furnished with nuts and bolts and furnished with eye-bolts, for adjustable rings, also hook eyes for adjustable rings when so ordered. Price depends on quantity and specifications.

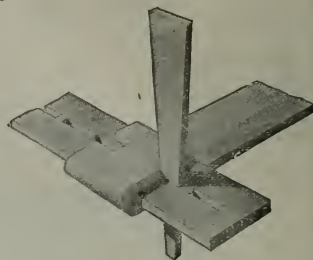
COLUMN CLAMPS



Key in Use

K. & W.
PERFECTION
COLUMN CLAMPS

THE ONLY CLAMP WITH
PERFECT ADJUSTMENT



Clamp in Use

USED FOR

SQUARE, RECTANGLE, OR OCTAGON CONCRETE FORMS

IMPORTANT POINTS ABOUT PERFECTION CLAMPS

All cuts show correct way of using "**PERFECTION**" clamps when lumber in forms is of the same thickness. Should lumber vary in thickness, those variations in the thickness are provided for by turning outward the slot in the bend of the clamp. You have used clamps on your concrete forms. Now, study these cuts and you at once see the advantages of the "**PERFECTION**" over all others.

NOTE:—Easier to handle, store and ship. No lost space. Perfect adjustment. Can not wear out or break. No slides to rust or clog up. Lasts longer. Only tool required is a hammer. Pay for themselves on one job by the saving in labor. Most important part of your equipment.

FACTS ABOUT COLUMN CLAMPS

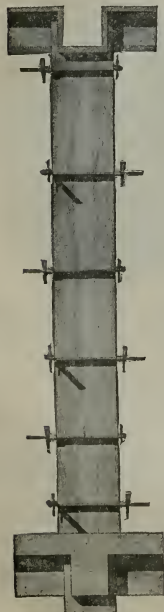
The clamps here illustrated are the only clamps manufactured with a perfect adjustment. They are a bigger-money maker for the contractor than any other part of his equipment. You have a concrete mixer because you know by actual experience that you can save money over the old way of mixing concrete by hand. Then why not metal column clamps and save the labor of making wood clamps? Save the price of buying long iron bolts, save the time of having the threads of bolts gone over each time they are used on another job. Save the expense of handling and the space they take up, and the expense of a wood clamp bursting and destroying a whole column. **No progressive or modern contractor can afford to be without these column clamps.** Order today and begin to save money on your next concrete job.

They will fit any size column. The arms are made of the best selected mild steel. Using $2\frac{1}{4} \times \frac{1}{4}$ -inch steel in the clamps for 12 to 26-inch columns; $2\frac{1}{2} \times \frac{1}{4}$ -inch steel in clamps for 18 to 32-inch columns. They can be used with any other make clamp. They have a perfect adjustment.

The following are Column Sizes carried in stock.

No. 1. 12 inch to 26 inch column adjustment. List Price per set. . \$4.50

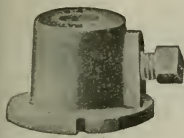
No. 2. 18 inch to 32 inch column adjustment. List Price per set. . 5.50



Complete Column

CONCRETE FORM CLAMPS

UNIVERSAL FORM CLAMPS

Fig. 4
Universal

The clamp itself is a simple patented casting with a flanged bearing surface, an oval hole with shoulders at the small side of opening through which a plain bar is passed. There is a set screw threaded into the large side of opening and perpendicular to same, to engage the rod intermediate of the shoulders, so as to depress the rod between the shoulders. The depression of the rod between the shoulders insures the clamp against slipping or moving on the rod. The set screw does not carry the load, it merely holds the rod in the depression, so as to allow the shoulders to carry the load.

ADVANTAGES

No threaded bolts, nuts, washers, twisted wires, special devices, bulging forms, and, besides, they save 50% of your labor cost of clamping or fastening forms.

DESCRIPTION

The rod clamps are made in six sizes, namely: No. 1 for $\frac{1}{4}$ and $\frac{5}{16}$ inch rods; No. 2 for $\frac{3}{8}$ inch rods; No. 3 for $\frac{1}{2}$ inch rods; No. 4 and No. 4 Extra Heavy for $\frac{5}{8}$ inch rods. The No. 4 is recommended for column clamping and No. 4 Extra Heavy for large retaining walls. The No. 5 clamp is for $\frac{3}{4}$ inch rods and is used only for heavy work.

PRICE LIST—CLAMPS

Size	Size of Rod inches	Base Diameter inches	Length inches	Weight per 100	Cost per 100	Size	Size of Rod inches	Base Diameter inches	Length inches	Weight per 100	Cost per 100
1	$\frac{1}{4}$ and $\frac{5}{16}$	2	1 $\frac{3}{8}$	55	\$10.00	4	$\frac{5}{8}$	3	2	185	\$19.00
2	$\frac{3}{8}$	2	1 $\frac{7}{8}$	82	12.50	4*	$\frac{5}{8}$	3 $\frac{1}{4}$	2 $\frac{3}{4}$	258	26.50
3	$\frac{1}{2}$	2 $\frac{1}{2}$	2	116	15.00	5	$\frac{3}{4}$	4 $\frac{1}{2}$	3 $\frac{1}{2}$	475	39.38

No. 4* Extra Heavy.

Fig. 1
Open

WIRE CLAMPS

Where the work does not call for rods and rod clamps, the Universal Wire Clamp is the device to use. The Universal Wire Clamp makes wiring cheap from a labor and material standpoint of view, considering only the cost per tie. This wire clamp can be placed and locked in place in less than 10 seconds. It is the safest and most efficient wire tightening device on the market. We recommend the wire clamp only for light wall work or for work where the actual load per clamp will not exceed 600 lbs. on a No. 9 annealed wire.

Fig. 1
Closed

ADVANTAGES OVER TWISTED WIRES

Put on and clamped in 10 seconds. No boring of holes necessary. No wood wedges. No twisting of wires. No man necessary inside of narrow forms. Can be removed in 3 seconds. Lower in first cost than any other device on the market. One piece and no tools necessary. One size clamp for any size form. One clamp only for each complete form tie. Adds maximum efficiency to wire forms. Locks automatically and guaranteed not to slip.

The amount of takeup is about 1 $\frac{1}{2}$ inches in each strand of wire, which insures very crooked wires of being drawn up tight. In case wires are straight or in thin walls the 1 $\frac{1}{2}$ inch takeup may be too much. In this case allow the wires to slip through slots until handle is at an angle of 45° before locking. In this way the maximum takeup can be reduced to suit conditions.

List price per hundred \$12.00

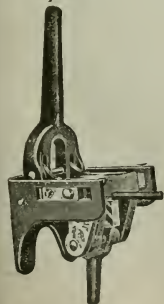
PRICE LIST—TIGHTENING WRENCHES

Size	Use With	Price
1.	No. 1 and 2 Clamps.....	\$5.00
2.	No. 3 Clamps	5.75
3.	No. 4 Clamps	6.25
4.	No. 5 Clamps	7.00

PRICE LIST—ROD PULLERS

- No. 1. For light work, such as for pulling rods $\frac{1}{4}$ inch to $\frac{1}{2}$ inch, not longer than 4 feet...\$12.50
 No. 2. For heavy work, takes $\frac{1}{4}$ inch to $\frac{3}{4}$ inch rods 19.00
 Prices include one jaw for one diameter of rod.
 Extra jaws, \$0.75 each.

When ordering Rod Pullers be sure to state size of rod on which they are to be used so that proper jaw may be sent.



Rod Puller



Tightening Wrench

GEO. B. CARPENTER & CO.

STUB OR BRIDGE TURNBUCKLES

DROP FORGED



Fig. 60A. With Right and Left Stub Bolt Ends



Fig. 60B. Without Stub Ends

In ordering, specify opening. Longer openings to order. Can be furnished without stub ends if desired. Prices on application.

LIST PRICE WITH STUB ENDS

Diameter inches	5½ inch Opening each	9 inch Opening each	12 inch Opening each	Diameter inches	5½ inch Opening each	9 inch Opening each	12 inch Opening each
¾	\$0.40	...	...	1¾	\$2.00	\$2.50	\$3.00
7/8	.42	\$0.53	\$0.63	1 7/8	2.25	2.82	3.38
1	.45	.57	.68	2	2.65	3.31	3.98
1 1/8	.48	.60	.72	2 1/8	3.10	3.88	4.65
1 1/4	.50	.63	.75	2 1/4	3.50	4.38	5.25
1 1/2	.63	.79	.95	2 3/8	4.00	5.00	6.00
1 3/4	.75	.94	1.13	2 1/2	4.50	5.63	6.75
1 7/8	.88	1.10	1.32	2 5/8	5.00	6.25	7.50
2	1.00	1.25	1.50	2 3/4	5.50	6.88	8.25
2 1/8	1.25	1.57	1.88	2 7/8	6.00	7.50	9.00
2 1/4	1.38	1.73	2.07	3	6.50	8.13	9.75
2 1/2	1.50	1.88	2.25	3 1/4	8.00	10.00	12.00
2 3/4	1.75	2.19	2.63	3 1/2	10.00	12.50	15.00



Fig. 60C. With Hook and Eye

Diameter of Thread inches	Length in the Clear between Heads, inches	Length of Buckle Outside, inches	Galvanized, each	Plain, each
1/8	3 1/2	4 1/8	\$0.80	\$0.70
1/4	4	4 3/4	.85	.75
3/8	4 1/4	5 1/4	.90	.80
1/2	4 1/2	5 3/4	1.10	.95
5/8	5	6 1/4	1.25	1.05
3/4	6	7 1/2	1.50	1.30
7/8	7 1/4	9	1.85	1.65
1	8 1/2	10 1/2	2.20	1.75
1 1/8	9 1/4	11 3/4	3.25	2.60
1 1/4	10	12 3/4	4.25	3.60
1 1/2	11	14	5.50	4.75
1 3/4	12	15 1/2	6.75	5.50
1 7/8	13	16 3/4	8.25	6.75
2	14	18	9.75	7.75
2 1/8	15	19 1/2	12.00	9.50
2 1/4	16	21	15.00	13.00
2 1/2	18	23	20.00	17.00
2 3/4	18	23	25.00	22.00
3	24	31	28.00	25.00
3 1/8	24	31	33.50	30.50
3 1/4	24	32	38.50	35.00

We can furnish to order with two hooks, two eyes or with eye and shackle.

FOR DERRICK GUY TIGHTENERS. SEE INDEX

MILD STEEL

STANDARD CLASSIFICATION OF NET EXTRAS

STEEL BARS AND SMALL SHAPES

Net extra per 100 lbs.

ROUNDS AND SQUARES

Size	Base	Size	Base
$\frac{3}{4}$ to $3\frac{1}{8}$ "	\$0.05	$\frac{3}{4}$ "	\$1.00
$\frac{1}{2}$ to $\frac{1}{8}$ "	.10	$\frac{1}{8}$ "	1.25
$\frac{1}{4}$ to $\frac{1}{16}$ "	.20	$3\frac{1}{8}$ to $3\frac{1}{2}$ "	.075
$\frac{3}{16}$ "	.25	$3\frac{1}{2}$ to $4\frac{1}{8}$ "	.125
$\frac{1}{8}$ "	.30	$4\frac{1}{8}$ to $4\frac{1}{4}$ "	.15
$\frac{1}{16}$ "	.35	$4\frac{1}{4}$ to $5\frac{1}{8}$ "	.20
$\frac{1}{32}$ "	.40	$5\frac{1}{8}$ to $5\frac{1}{4}$ "	.25
$\frac{1}{64}$ "	.50	$5\frac{1}{4}$ to $6\frac{1}{8}$ "	.375
$\frac{1}{128}$ "	.75	$6\frac{1}{8}$ to $6\frac{1}{4}$ "	.50
		$6\frac{1}{4}$ to $7\frac{1}{4}$ "	.625

FLATS

Gauges shown are Birmingham Wire Gauge

Size	Base
1 to 6" x $\frac{3}{8}$ "	\$0.10
1 to 6" x $\frac{1}{2}$ "	.20
$\frac{1}{8}$ to $\frac{1}{4}$ " x $\frac{3}{8}$ "	.25
$\frac{1}{8}$ to $\frac{1}{4}$ " x $\frac{1}{2}$ "	.25
$\frac{1}{8}$ to $\frac{1}{4}$ " x $\frac{3}{4}$ "	.35
$\frac{1}{8}$ to $\frac{1}{4}$ " x 1"	.50
$\frac{1}{4}$ to $\frac{1}{2}$ " x $\frac{3}{8}$ "	.60
$\frac{1}{4}$ to $\frac{1}{2}$ " x $\frac{1}{2}$ "	.70
$\frac{1}{4}$ to $\frac{1}{2}$ " x $\frac{3}{4}$ "	.80
$\frac{1}{4}$ to $\frac{1}{2}$ " x 1"	1.00
$\frac{1}{2}$ to 6" x $\frac{1}{8}$ "	.05
$\frac{1}{2}$ to 6" x $\frac{1}{4}$ "	.10
$\frac{3}{4}$ to 6" x $\frac{1}{2}$ "	.15
$3\frac{1}{8}$ to 6" x 3"	.20

HALF OVALS

Gauges shown are Birmingham Wire Gauge

Size	Base
1 to 4" x $\frac{1}{4}$ " and thicker	\$0.25
1 to 4" x Nos. 7, 8, 9 and $\frac{1}{8}$ "	.35
1 to 4" x Nos. 10, 11, 12 and $\frac{1}{8}$ "	.50
$\frac{3}{4}$ to $\frac{1}{2}$ " x $\frac{1}{8}$ " and thicker	.50
$\frac{3}{4}$ to $\frac{1}{2}$ " x Nos. 10, 11, 12 and $\frac{1}{8}$ "	.65
$\frac{3}{4}$ to $\frac{1}{2}$ " x Nos. 13, 14 and 15	.80
$\frac{5}{8}$ to $\frac{1}{2}$ " x $\frac{3}{8}$ " and thicker	.60
$\frac{5}{8}$ to $\frac{1}{2}$ " x Nos. 10, 11, 12 and $\frac{1}{8}$ "	.75
$\frac{5}{8}$ to $\frac{1}{2}$ " x Nos. 13, 14 and 15	.90
$\frac{1}{2}$ to $\frac{3}{8}$ " x $\frac{1}{8}$ " and thicker	.80
$\frac{1}{2}$ to $\frac{3}{8}$ " x Nos. 13, 14 and 15	1.05
$\frac{3}{8}$ to $\frac{1}{4}$ " x $\frac{3}{8}$ " and thicker	1.35
$\frac{3}{8}$ to $\frac{1}{4}$ " x Nos. 14 and 15	1.60

SIZES

OVALS

Net extra per 100 lbs.

$\frac{3}{4}$ to $2\frac{1}{2}$ " x $\frac{3}{8}$ " and thicker	\$0.20
$\frac{3}{4}$ to $2\frac{1}{2}$ " x $\frac{1}{2}$ "	.30
$\frac{3}{4}$ to $2\frac{1}{2}$ " x $\frac{5}{8}$ "	.45
$\frac{5}{8}$ to $\frac{1}{2}$ " x $\frac{1}{8}$ " and thicker	.25
$\frac{5}{8}$ to $\frac{1}{2}$ " x $\frac{1}{4}$ "	.50
$\frac{5}{8}$ to $\frac{1}{2}$ " x $\frac{1}{2}$ "	.65
$\frac{1}{2}$ to $\frac{3}{8}$ " x $\frac{1}{4}$ " and thicker	.55
$\frac{1}{2}$ to $\frac{3}{8}$ " x $\frac{1}{2}$ "	.70
$\frac{1}{2}$ to $\frac{3}{8}$ " x $\frac{3}{4}$ "	.95
$\frac{3}{8}$ to $\frac{1}{4}$ " x $\frac{1}{8}$ " and thicker	.95
$\frac{3}{8}$ to $\frac{1}{4}$ " x $\frac{1}{2}$ "	1.20
$\frac{3}{8}$ to $\frac{1}{4}$ " x $\frac{3}{4}$ "	1.45

BANDS

Gauges shown are Birmingham Wire Gauge

Net extra per 100 lbs.

$1\frac{1}{2}$ to 6" x Nos. 7, 8, 9 and $\frac{1}{8}$ "	\$0.20
$1\frac{1}{2}$ to 6" x Nos. 10, 11, 12 and $\frac{1}{8}$ "	.30
1 to $1\frac{1}{8}$ " x Nos. 7, 8, 9 and $\frac{1}{8}$ "	.25
1 to $1\frac{1}{8}$ " x Nos. 10, 11, 12 and $\frac{1}{8}$ "	.35
$\frac{1}{2}$ to $\frac{1}{4}$ " x Nos. 7, 8, 9 and $\frac{1}{8}$ "	.35
$\frac{1}{2}$ to $\frac{1}{4}$ " x Nos. 10, 11, 12 and $\frac{1}{8}$ "	.40
$\frac{1}{2}$ to $\frac{3}{4}$ " x Nos. 7, 8, 9 and $\frac{1}{8}$ "	.50
$\frac{1}{2}$ to $\frac{3}{4}$ " x Nos. 10, 11, 12 and $\frac{1}{8}$ "	.60
$\frac{3}{8}$ to $\frac{5}{8}$ " x Nos. 7, 8, 9 and $\frac{1}{8}$ "	.60
$\frac{3}{8}$ to $\frac{5}{8}$ " x Nos. 10, 11, 12 and $\frac{1}{8}$ "	.65
$\frac{1}{2}$ " x Nos. 7, 8, 9 and $\frac{1}{8}$ "	.65
$\frac{1}{2}$ " x Nos. 10, 11, 12 and $\frac{1}{8}$ "	.75
$\frac{1}{4}$ " x Nos. 7, 8, 9 and $\frac{1}{8}$ "	.90
$\frac{1}{4}$ " x Nos. 10, 11, 12 and $\frac{1}{8}$ "	1.05
$\frac{3}{8}$ " x Nos. 7, 8, 9 and $\frac{1}{8}$ "	.95
$\frac{3}{8}$ " x Nos. 10, 11, 12 and $\frac{1}{8}$ "	1.20

FOR CUTTING AND QUANTITY SCHEDULE, SEE INDEX

STRUCTURAL SHAPES—MILD STEEL

STANDARD CLASSIFICATION OF NET EXTRAS



ANGLES



Sizes—

Net extra per 100 lbs.

1 1/2 x 1 1/2"	and wider, but under 3" wide; by 3/16" and heavier.	\$0.10
1 1/2 x 1 1/2"	and wider, but under 3" wide x 1/8"	.15
1 x 1	to 1 1/4 x 1 1/4" x 3/16" and heavier.	.15
1 x 1	to 1 1/4" x 1 1/4" x 1/8"	.20
7/8 x 7/8"	x 3/16"	.20
7/8 x 7/8"	x 1/8"	.25
3/4 x 3/4"	x 3/16"	.25
3/4 x 3/4"	x 1/8"	.30
5/8 x 5/8"	x 1/8"	1.10
5/8 x 5/8"	x 3/32"	1.30
1/2 x 1/2"	x 1/8"	1.60
1/2 x 1/2"	x less than 1/8"	1.80
3"	on one or both legs by less than 1/4" thick.	.35

Unequal leg angles are subject to special prices, which will be furnished on application.



CHANNELS



Sizes—

Net extra per 100 lbs.

1 1/2"	and wider, but under 3" wide; by 3/8" and heavier	\$0.15
1 1/2 x 1 1/2"	x 3/16" (Box Channel—Special)	.30
1 1/2"	and wider, but under 3" wide x 1/8"	.25
1 to 1 1/4"	x 3/16" and heavier	.25
1 to 1 1/4"	x 1/8"	.35
1 to 1 1/4"	x 3/16"	.50
3/4 and 7/8"	x 3/16" and heavier	.30
3/4 and 7/8"	x 1/8"	.40
3/4 and 7/8"	x 3/16"	.55
5/8 x 1/2"	and heavier	1.20
5/8 x 3/16"		1.40
1/2 x 5/16"	and heavier	1.80
1/2 x 5/16"		2.00



TEES



Sizes—

Net extra per 100 lbs.

1 1/2 x 1 1/2"	and wider, but under 3" wide; by 3/8" and heavier	\$0.20
1 x 1	to 1 1/4 x 1 1/4 x 3/16" and heavier	.40
1 x 1	to 1 1/4 x 1 1/4 x 1/8"	.50
7/8 x 7/8"	x 3/16"	.50
7/8 x 7/8"	x 1/8"	.60
3/4 x 3/4"	x 3/16"	.60
3/4 x 3/4"	x 1/8"	.70
5/8 x 5/8"	x 1/8"	1.30
1/2 x 1/2"	x 1/8"	1.80

Unequal leg tees are subject to special prices, which will be furnished on application.

HEXAGONS

Sizes—	Net extra per 100 lbs.
3/4 to 3"	\$0.15
5/8 to 1 1/8"	.25
1/2 to 1 1/8"	.35
7/16"	.55
3/8"	.65
1/4"	.75
1/4"	1.00

HALF ROUNDS

Sizes—	Net extra per 100 lbs.
1 to 3"	\$0.20
3/4 to 1 1/8"	.35
5/8 to 1 1/8"	.50
1/2 to 1 1/8"	.70
3/8 to 1 1/8"	1.10

We can furnish a large assortment of I beams direct from Chicago stock.

FOR CUTTING AND QUANTITY SCHEDULE, SEE INDEX

QUANTITY DIFFERENTIALS AND SCHEDULE OF CUTTING EXTRAS

QUANTITY DIFFERENTIALS

All specifications for less than 2000 lbs. of a size will be subject to the following extras, the total weight of a size ordered, to determine the extra, regardless of length and regardless of exact quantity actually shipped.

Quantities less than 2000 lbs., but not less than 1000 lbs.	\$0.15
Quantities less than 1000 lbs. ....	.35
Straightening	
	Net extra per 100 lbs.

Machine straightening \$10

Machine Cutting Rounds and Squares 1 ½ inches and Larger to Specified Lengths

Lengths over 48 inches.	\$0.15
Lengths over 24 inches to 48 inches, inclusive. ....	.25
Lengths over 12 inches to 24 inches, inclusive. ....	.35
Lengths of 12 inches and less, extra will be furnished on application, but will not be less than. ....	.45

The above extras apply only to .50 Carbon and under. Extras for Machine Cutting over .50 Carbon will be furnished on application.

Extras for Machine Cutting Rounds and Squares under 1 ½ inches, Flats, etc., will be furnished on application.

Cutting to Specified Lengths Other than Machine Cutting

	Net extra per 100 lbs.
Lengths of 60 inches and over.	No Charge
Lengths over 48 inches to 59 inches, inclusive.	\$0.05
Lengths over 24 inches to 48 inches, inclusive. ....	.10
Lengths over 12 inches to 24 inches, inclusive. ....	.20
Lengths of 12 inches and less, extra will be furnished on application, but will not be less than. ....	.30

WAREHOUSE CUTTING EXTRAS

For the convenience of customers, we print below standard card extras for cutting, which will be added to current prices on material where special cutting is required.

Charging Unit, 100 lbs.	3' and over	2' to 3'	1' to 2'	6" to 1'	4" to 6"	2" to 4"
Beams and Channels, 3" and over.	\$0.00	\$0.15	\$0.30	\$0.35	\$1.40	\$2.30
Zeels.						
Tees, 3" and over.						
"H" Sections.						
Angles, 2x2x $\frac{3}{8}$ and larger. ....	.00	.10	.20	.30	.50	.75
Mild Steel Rounds and Squares, 2" and under. ....	.20	.20	.30	.50	.65	.80
Mild Steel Rounds and Squares over 2".						
Flats, ¼" thick and over.						
Angles, under 2x2x $\frac{3}{8}$, also 2" to 3" wide by ½" thick.						
Channels, under 3". ....	.30	.30	.40	.85	1.40	2.30
Tees, under 3".						
Forging Rounds.						
Free cutting Rounds.						
Plates, $\frac{3}{8}$ " and over:						
To length only. ....	.00	.10	.20	.30		
To length and width. ....	.20	.30	.40	.50		
Sketch Plates, $\frac{3}{8}$ " and over. ....	.25	.35	.45	.55		

Plates Sheets	Cutting to 1' and over	Length 6' to 1'	Splitting to 6" and over in width	Splitting to Width of 6" and over and Cutting to Length	
				1' and over	6' to 1'
Plates No. 8.	\$0.20	\$0.40	\$0.20	\$0.40	\$0.60
Sheets No. 10. ....	.25	.45	.25	.45	.65
Sheets No. 12. ....	.30	.50	.30	.50	.70
Sheets No. 14. ....	.35	.55	.35	.55	.75
Sheets No. 16. ....	.40	.60	.40	.60	.80

Reinforcing Bars Cut 1' 0" and longer, net weight:

¾" and over.	\$0.15
¾", 1", 1½", 2". ....	.20
1" and smaller. ....	.25
Sheets, Nos. 18 and 20.	
Sheets, all gauges, cut to sketch.	
Plates, No. 8, cut to sketch.	
Billets.	
Light Flats and Bands, which include all gauges $\frac{3}{8}$ " and lighter.	

Prices on request

The above cutting charges apply where the waste in material is not excessive, and are subject to change without notice.

TOOL STEEL

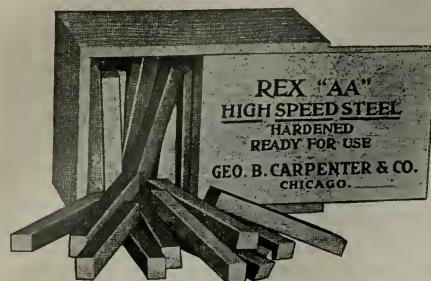
In listing the following grades of Tool Steel, we have selected only those which our experience has shown to be the best suited for various purposes. There are many brands and grades of Tool Steel which compare favorably with those we list, but none of them are better.

If you do not find a Steel in this list which will cover your needs, write us, giving full information and we shall be pleased to recommend that which we know will serve you best. Our Service Department has complete data on all brands and grades.

Rex "AA" and "A." Forges easily, anneals and machines readily and responds perfectly to heat treatment. Especially recommended for lathe, planer and boring tools, taps, reamers, twist and straight drills, dies, gear cutters, special cutters, etc.

It is being extensively used for dies for forming hot iron and steel, and for certain classes of tools for stone work, woodworking knives, etc.

Furnished in any length bars, annealed or unannealed, rounds, squares, octagons, flats, blocks, also tool holder sizes hardened ready for use.



Park's Self-Hardening Steel. A standard brand of self-hardening steel, excelled only by the two brands named above for lathe, planer and boring tools, and is less expensive. It is well suited for use where machines are not fitted for highest speed or where the work is so remittent or of a character that the utmost capacity is not required.

Silver Tool Steel. A well known brand. A grade of tool steel of extra fine quality, especially recommended for cold chisels, cold cutters, cold sets, boiler makers' snaps, granite points, woodworking and many other kinds of edge tools, etc. Made in all temper.

Extra Quarry Steel. Especially recommended for rock drills, granite tools and difficult quarry work. quarry tools, hammers, sledges and general purposes.

Peerless "A" Tool Steel. A special steel developed particularly for use on hot work and principally for hot heading and forging dies for bolts and rivets, cut-offs, bull-dozer tools, swedges, hydraulic forging dies, gripping dies, track bolt work, etc. This steel has given exceptionally satisfactory results wherever used.

TEMPERING COLORS AND TEMPERATURES IN DRAWING CARBON TEMPER STEELS

The colors which successively appear on the surface of hardened steel, slowly heated, are as follows:			
Yellowish White or Light Straw	430 degrees Fahr.	Purple	530 degrees Fahr.
Dark Straw	450 degrees Fahr.	Violet	550 degrees Fahr.
Gold Color	490 degrees Fahr.	Blue (Light)	580 degrees Fahr.
Brown	510 degrees Fahr.	Blue (Dark)	600 degrees Fahr.

TOOL STEEL PRICES

Rex "AA" High Speed Steel	Per lb. \$	Silver Tool Steel	Per lb. \$
Rex "A" High Speed Steel	"	Extra Quarry Tool Steel	"
High Speed Steel, hardened, standard sizes and lengths for tool holders	Per lb.	Black Diamond Tool Steel	"
Park's Self-Hardening Tool Steel	"	Peerless "A" Alloy Tool Steel	"

BASE SIZES

Round, Square and Octagon— $\frac{5}{8}$ inch to 2 inches inclusive

Flat— $\frac{5}{8}$ inch to 2 inches thick by $\frac{5}{8}$ inch to 2 inches wide

All dimensions inclusive. Intermediate sizes take the next higher extra.

EXTRA SIZES

Round, Square and Octagon

Inches	Extra per Lb. Cents	Inches	Extra per Lb. Cents	Inches	Extra per Lb. Cents
$\frac{1}{8}$ to $\frac{1}{4}$	2.0	$\frac{2}{8}$ to 3	2.5	$\frac{5}{8}$ to $\frac{5}{4}$	5.0
$\frac{1}{4}$ to $\frac{3}{8}$	3.5	$\frac{3}{8}$ to $3\frac{1}{2}$	3.0	$\frac{5}{4}$ to 6	5.5
$\frac{3}{8}$ to $\frac{1}{2}$	6.0	$\frac{3}{4}$ to 4	3.5	$\frac{6}{8}$ to $\frac{6}{4}$	6.0
$\frac{1}{2}$ to $\frac{3}{4}$	8.5	$\frac{4}{8}$ to $4\frac{1}{2}$	4.0	$\frac{6}{4}$ to 7	6.5
$\frac{3}{4}$ to $2\frac{1}{2}$	2.0	$\frac{4}{4}$ to 5	4.5		

EXTRA SIZES

FLAT

Inches	Extra per Lb. Cents	Inches	Extra per Lb. Cents	Inches	Extra per Lb. Cents
$\frac{1}{8}$ x $\frac{3}{8}$	40.0	$\frac{5}{8}$ x $\frac{3}{4}$	3.5	$\frac{1}{2}$ x $\frac{1}{4}$ to 6	2.0
$\frac{1}{8}$ x $\frac{1}{4}$	30.0	$\frac{1}{2}$ x $1\frac{1}{2}$	3.0	$\frac{1}{2}$ x $\frac{1}{2}$ to 1	2.5
$\frac{1}{8}$ x $\frac{3}{8}$	20.0	$\frac{1}{2}$ x $\frac{1}{2}$ to $\frac{3}{4}$	3.0	$\frac{1}{2}$ x $1\frac{1}{2}$ to 6	2.0
$\frac{1}{8}$ x $\frac{1}{2}$ to 2	14.0	$\frac{3}{4}$ x $\frac{1}{2}$ to $1\frac{1}{2}$	3.0	$\frac{5}{8}$ to 2 x $\frac{5}{8}$ to 2	0.0
$\frac{1}{4}$ x $\frac{1}{4}$ to 3	14.0	$\frac{3}{4}$ x $1\frac{1}{2}$ to 5	2.5	$\frac{5}{8}$ to 2 x $2\frac{1}{4}$ to 4	4.0
$\frac{1}{4}$ x $\frac{1}{2}$ to $\frac{1}{2}$	8.0	$\frac{1}{2}$ x $\frac{1}{2}$ to 1	3.0	$\frac{5}{8}$ to 2 x $4\frac{1}{2}$ to 7	2.0
$\frac{1}{4}$ x $\frac{3}{8}$ to 1	5.0	$\frac{1}{2}$ x $1\frac{1}{2}$ to $5\frac{1}{2}$	2.5	$\frac{2}{4}$ to 3 x $2\frac{1}{4}$ to 4	4.0
$\frac{1}{4}$ x $1\frac{1}{2}$ to 4	3.0	$\frac{1}{2}$ x $\frac{1}{2}$ to 1	2.5	$\frac{2}{4}$ to 3 x $4\frac{1}{2}$ to 7	2.0
$\frac{1}{2}$ x $\frac{3}{8}$ to $\frac{5}{8}$	5.0				

Intermediate sizes take the next higher extra

Annealing.....2c per lb. extra

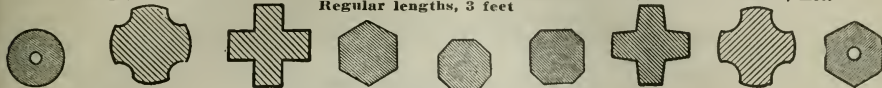
Bevels, same Classification as flats, plus 10c per lb. for shape

Cutting to Specified Single and Multiple Lengths

24 inches and over	Per Lb., Cents	12 inches to $17\frac{1}{2}$ inches	Per Lb., Cents
18 inches to $23\frac{1}{2}$ inches	1.0	6 inches to $11\frac{1}{2}$ inches	3.0
	2.0		4.0
Less than 6 inches—Special Price			

HOLLOW, OCTAGON AND CRUCIFORM DRILL STEEL

For Small Taps, Reamers, Punches, Twist Drills, Dental Tools, Watch Parts, Electrical Work, Etc.
Regular lengths, 3 feet



ROUND POLISHED DRILL ROD

Notice: Round and Square Drill Rods only carried in stock. Other shapes furnished to order promptly.

Nos.	Sizes in Decimals of an Inch	Nearest Sizes in Fractions of an Inch	Prices per lb.	Nos.	Sizes in Decimals of an Inch	Nearest Sizes in Fractions of an Inch	Prices per lb.	Nos.	Sizes in Decimals of an Inch	Nearest Sizes in Fractions of an Inch	Prices per lb.
1.	0.984	1	.50	32	0.115		.90	32	0.115		.90
0.984	0.984		.50	33	0.112		.90	33	0.112		.90
0.969	0.969		.50	34	0.110		.90	34	0.110		.90
0.953	0.953		.50	35	0.108		.90	35	0.108		.90
0.937	0.937		.50	36	0.106		.90	36	0.106		.90
0.921	0.921		.50	37	0.103		.90	37	0.103		.90
0.906	0.906		.50	38	0.101		.90	38	0.101		.90
0.890	0.890		.50	39	0.099		1.05	39	0.099		1.05
0.875	0.875		.50	40	0.097		1.05	40	0.097		1.05
0.859	0.859		.50	41	0.095		1.05	41	0.095		1.05
0.844	0.844		.50		0.094		1.05		0.094		1.05
0.828	0.828		.50	42	0.092		1.05	42	0.092		1.05
0.812	0.812		.50	43	0.088		1.05	43	0.088		1.05
0.796	0.796		.50	44	0.085		1.05	44	0.085		1.05
0.781	0.781		.50	45	0.081		1.05	45	0.081		1.05
0.765	0.765		.50	46	0.078		1.05	46	0.078		1.05
0.750	0.750		.55		0.077		1.20		0.077		1.20
0.734	0.734		.55	47	0.075		1.20	47	0.075		1.20
0.719	0.719		.55	48	0.072		1.20	48	0.072		1.20
0.703	0.703		.55	49	0.069		1.20	49	0.069		1.20
0.687	0.687		.55	50	0.066		1.45	50	0.066		1.45
0.671	0.671		.55	51	0.063		1.45	51	0.063		1.45
0.656	0.656		.55	52	0.0625		1.45	52	0.0625		1.45
0.640	0.640		.55		0.062		1.45		0.062		1.45
0.625	0.625		.55	53	0.058		1.80	53	0.058		1.80
0.609	0.609		.55	54	0.055		1.80	54	0.055		1.80
0.594	0.594		.55	55	0.050		1.80	55	0.050		1.80
0.578	0.578		.55		0.0468		1.80		0.0468		1.80
0.562	0.562		.55	56	0.045		1.80	56	0.045		1.80
0.546	0.546		.55	57	0.042		1.80	57	0.042		1.80
0.531	0.531		.55	58	0.041		2.10	58	0.041		2.10
0.515	0.515		.55	59	0.040		2.10	59	0.040		2.10
0.500	0.500		.60	60	0.039		2.10	60	0.039		2.10
0.484	0.484		.60	61	0.038		2.40	61	0.038		2.40
0.469	0.469		.60	62	0.037		2.40	62	0.037		2.40
0.453	0.453		.60	63	0.036		2.70	63	0.036		2.70
0.437	0.437		.60	64	0.035		2.70	64	0.035		2.70
0.425	0.425		.75	65	0.033		3.00	65	0.033		3.00
0.421	0.421		.75	66	0.032		3.00	66	0.032		3.00
0.413	0.413		.75	67	0.031		3.00	67	0.031		3.00
0.406	0.406		.75	68	0.030		3.30	68	0.030		3.30
0.404	0.404		.75	69	0.029		3.30	69	0.029		3.30
0.397	0.397		.75	70	0.027		3.60	70	0.027		3.60
0.391	0.391		.75	71	0.026		3.60	71	0.026		3.60
0.386	0.386		.75	72	0.024		3.60	72	0.024		3.60
0.377	0.377		.75	73	0.023		3.60	73	0.023		3.60
0.375	0.375		.75	74	0.022		3.90	74	0.022		3.90
0.368	0.368		.75	75	0.020		4.05	75	0.020		4.05
0.359	0.359		.75	76	0.018		4.20	76	0.018		4.20
0.358	0.358		.75	77	0.016		4.50	77	0.016		4.50
0.348	0.348		.75	78	0.015		4.80	78	0.015		4.80
0.344	0.344		.75	79	0.014		5.10	79	0.014		5.10
0.339	0.339		.75	80	0.013		5.40	80	0.013		5.40
0.332	0.332		.75								

Sizes from 1 to 1½ inclusive by 64ths list \$0.50 per lb.
Intermediate sizes to order in quantities not less than 50 pounds of each size.

SQUARE POLISHED DRILL RODS

Sizes in Decimals of an Inch	Sizes in Fractions of an Inch	Prices per lb.	Sizes in Decimals of an Inch	Sizes in Fractions of an Inch	Prices per lb.	Sizes in Decimals of an Inch	Sizes in Fractions of an Inch	Prices per lb.
0.500	½	\$1.60	0.344	⅜	\$1.60	0.1875	⅜	\$1.60
0.4687	⅜	1.60	0.3125	⅝	1.60	0.156	⅝	1.60
0.4375	⅝	1.60	0.281	⅞	1.60	0.125	⅞	1.60
0.4062	⅞	1.60	0.250	1	1.60	0.094	1	1.60
0.375	¾	1.60	0.219	¾	1.60	0.062	¾	1.60

HOLLOW DRILL STEEL

For electric and other drills, where a free passage of air or water is required through the drill bars we can furnish in rounds and hexagons, standard sizes. Prices upon receipt of specifications.

BLACK, BLUE AND ANNEALED SHEETS

BLACK SOFT STEEL SHEETS

WRITE OR WIRE US FOR LOWEST MARKET PRICES

Size	Est. Wt. per Sheet	Size	Est. Wt. per Sheet	Size	Est. Wt. per Sheet	Size	Est. Wt. per Sheet	Size	Est. Wt. per Sheet
No. 8		No. 10		No. 14		No. 18		No. 24	
24x 96	112	72x128	337.50	30x120	79.69	24x108	36.72	26x 96	17.68
30x 96	140	72x130	338.00	32x 96	68.00	24x120	40.80	26x120	22.10
30x120	175	72x144	404.50	34x 96	72.50	26x 96	35.36	28x 72	14.28
36x 96	168	72x156	437.50	36x 77	61.35	26x108	39.78	28x 84	16.66
38x120	210			36x 96	76.50	26x120	44.20	28x 96	19.04
38x144	252	No. 11		36x108	86.07	28x 96	38.08	28x101	20.03
42x 96	196	60x144	296.80	36x120	95.62	28x108	42.84	28x108	21.42
42x120	245	No. 12		36x144	114.75	28x120	47.60	28x120	23.80
42x144	294	24x 96	71.40	38x 96	80.70	30x 96	40.80	30x 96	20.40
48x 96	224	24x120	89.25	40x 77	66.80	30x108	45.90	30x120	25.50
48x120	280	26x 96	77.35	40x 96	83.30	30x120	51.00	36x 96	24.48
48x144	336	26x108	87.10	40x120	104.20	30x125	53.13	36x120	30.60
54x 96	252	26x120	96.68	42x 96	89.25	32x 96	43.60	42x 96	28.56
54x120	315	28x 96	83.30	42x120	111.57	36x 96	48.96	42x120	35.70
54x144	378	28x120	104.12	42x144	133.88	36x108	55.08		
60x 98	286	30x 96	89.25	48x 77	81.81	36x120	61.20	No. 26	
60x120	350	30x108	100.41	48x 84	89.24	38x144	73.44	24x 96	12.24
60x144	420	30x120	111.57	48x 96	102.00	40x 96	51.60	24x101	12.88
		36x 77	85.89	48x108	114.75	40x120	68.00	24x120	15.30
No. 10		36x 84	93.70	48x120	127.50	42x 96	57.12	26x 96	13.26
24x 96	91.81	36x 96	107.10	48x127	132.13	42x120	71.40	26x120	16.57
24x120	115.03	36x108	120.50	48x138	146.60	48x 96	65.28	28x 72	10.71
26x 96	99.46	36x120	133.87	48x144	153.00	48x120	81.60	28x 96	12.50
26x108	111.88	38x144	160.65	54x 77	92.02			28x 96	14.28
26x120	124.31	40x 96	116.60	54x 96	114.73	No. 20		28x108	16.06
28x 96	107.10	40x120	145.80	54x120	143.42	24x 96	24.48	28x120	17.85
28x108	120.50	42x 96	124.95	54x138	164.93	26x 96	26.52	30x 96	15.30
28x120	133.87	42x108	140.57	54x144	172.10	26x120	33.14	30x108	17.21
30x 96	114.75	42x120	156.19	54x156	182.80	28x 72	21.42	30x120	19.12
30x108	129.10	42x144	187.43			28x 84	24.99	36x 96	18.36
30x120	143.44	48x 77	114.54	No. 16		28x 96	28.56	36x120	21.42
36x 72	103.28	48x 84	124.93	24x 96	40.80	28x108	32.12	42x 96	26.77
36x 77	110.46	48x 96	142.80	24x108	45.90	28x120	35.70		
36x 96	137.70	48x108	160.65	24x120	51.00	30x 96	33.25	No. 27	
36x108	154.92	48x120	178.50	26x 96	44.20	30x120	30.60	24x 96	11.22
36x120	172.12	48x127	185.20	26x108	49.72	36x 96	36.72	24x101	11.80
36x144	206.55	48x138	205.25	26x120	55.25	42x 96	45.90	26x120	15.19
40x 96	150.00	48x144	214.20	28x 96	47.60	42x120	53.56	28x 96	13.08
40x120	187.50	48x156	227.50	28x108	53.54	48x 96	48.96	28x101	13.77
42x 96	160.65	54x 77	128.84	28x120	59.50	48x120	61.20	28x120	16.36
42x108	180.73	54x 96	160.63	30x 96	51.00			30x 96	14.02
42x115 1/2	192.27	54x108	180.71	30x108	57.37	No. 22		30x101	14.76
42x120	200.81	54x120	200.79	30x120	63.75	24x 96	20.40	30x120	17.53
42x144	240.87	54x138	230.91	32x 96	54.30	24x101	21.46	No. 28	
48x 77	147.29	54x144	240.95	34x 96	57.70	26x 96	25.50	24x 96	10.20
48x 84	160.66	54x156	255.90	36x 77	49.09	26x120	27.62	24x101	10.73
48x 96	183.60	60x 77	143.16	36x 96	61.20	28x 72	17.85	26x 96	11.04
48x108	229.50	60x 96	178.43	36x108	68.85	28x 84	20.83	28x 72	8.93
48x120	229.50	60x120	223.10	36x120	76.50	28x 96	23.80	28x 84	10.41
48x138	263.95	60x138	256.57	36x144	91.80	28x108	26.77	28x108	13.40
48x144	275.40	60x144	267.72	38x 96	64.60	28x120	29.75	28x120	14.87
48x156	292.50	60x156	284.40	40x 96	66.70	30x 96	30.60	30x 96	12.75
54x 77	165.69	No. 14		40x120	83.30	30x120	38.25	36x 96	15.00
54x 96	206.57	24x 96	51.00	42x 96	89.25	36x120	35.70	No. 29	
54x120	258.51	24x108	57.37	42x120	107.10	42x120	44.62	24x101	9.66
54x138	296.94	24x120	63.75	42x144	122.40	No. 24		No. 30	
54x144	309.85	26x 96	55.25	48x 77	65.46	24x 96	16.32	24x 96	8.16
54x156	329.10	26x108	62.16	48x 96	81.60	24x101	17.17	26x 96	10.20
60x 77	183.66	26x120	69.06	48x108	91.80	24x120	20.40		
60x120	236.90	28x 96	59.50	48x120	102.00				
60x138	283.94	28x108	66.94	48x138	117.30				
60x144	344.28	28x120	74.38	48x144	122.40				
60x156	365.60	30x 96	63.75	No. 18					
72x 96	270.00	30x108	71.73	24x 96	32.64				

Above weights are for steel. For iron deduct 2 per cent.

FLAT AND CORRUGATED SHEETS

BLACK OR GALVANIZED SHEETS

WRITE OR WIRE US FOR LOWEST MARKET PRICE

Size	Est. wt. per sheet	Size	Est. wt. per sheet	Size	Est. wt. per sheet	Size	Est. wt. per sheet	Size	Est. wt. per sheet	Size	Est. wt. per sheet
No. 10		42x120	115	36x 96	52	26x120	30	36x 96	28	30x120	21
24x 96	93	48x 96	105	36x120	65	28x 72	20	36x120	35	36x 96	20
30x 96	116	48x120	131	42x 96	60	28x 84	23	42x 96	32	36x120	25
30x120	145			42x120	75	28x 96	26	42x120	41		
36x 96	139	No. 16		48x 96	69	28x108	30			No. 28	
36x120	173	24x 96	43	48x120	86	28x120	33	No. 26		24x 96	13
42x 96	162	24x120	53			30x 72	21	24x 84	13	24x120	16
42x120	202	26x 96	46	No. 20		30x 84	25	24x 96	15	26x 96	14
48x 96	185	26x120	58	24x 96	27	30x 96	28	24x120	18	26x120	17
48x120	231	28x 96	50	24x120	33	30x120	35	26x 96	16	28x 72	11
48x138	264	28x120	62	26x 96	29	36x 96	34	26x120	20	28x 84	13
48x144	277	30x 96	53	26x120	36	36x120	42	28x 72	13	28x 96	15
		30x120	66	28x 72	23	42x 96	39	28x 84	15	28x108	16
No. 12		36x 96	64	28x 84	27	42x120	49	28x 96	17	28x120	18
24x 96	73	36x120	80	28x 96	31	48x 96	45	28x108	19	30x 72	12
30x 96	91	42x 96	74	28x108	35	48x120	56	28x120	21	30x 84	14
30x120	113	42x120	93	28x120	39			30x 72	14	30x 96	16
36x 96	109	48x 96	85	30x 72	25	No. 24		30x 84	16	30x108	18
36x120	136	48x120	106	30x 84	29	24x 84	16	30x 96	18	30x120	20
42x 96	127			30x 96	33	24x 96	19	30x108	20	36x 96	19
42x120	159	No. 18		30x108	37	24x120	23	30x120	23	36x120	23
48x 96	145	24x120	35	30x120	41	26x 96	20	36x 96	22		
48x120	181	26x 96	37	36x120	50	26x120	25	36x120	27	No. 30	
		26x120	47	42x 96	46	28x 72	16	42x 96	25	24x 96	11
No. 14		28x 72	30	42x120	58	28x 84	19	42x120	33	24x120	13
24x 96	53	28x 84	35	48x 96	55	28x 96	22	No. 27		26x 96	11
26x 96	57	28x101	42.33	48x120	66	28x108	24	24x 96	14	26x120	14
26x120	71	28x108	45			28x120	27	24x120	17	28x 96	12
30x 96	66	28x120	50	No. 22		30x 72	17	26x 96	15	28x120	15
30x120	82	24x 96	23	24x 96	23	30x 84	20	26x120	18	30x 96	13
36x 96	79	24x120	28	26x 96	24	30x 96	23	28x 96	16	30x120	16
36x120	98	26x 96	24			30x108	26	28x120	20	36x 96	16
42x 96	92					30x120	29	30x 96	17	36x120	20

For iron deduct 2 per cent. Above weights are for steel.

CORRUGATED ROOFING AND SIDING

Our roofing is made of full weight sheets and should be compared with others on a pound price basis.

When ordering state length of sheets required, unless otherwise specified No. 28 gauge 2½ corrugation will be furnished.

GALVANIZED

Gauge and Size	Gauge and Size	Gauge and Size	Gauge and Size	Gauge and Size
No. 16	No. 20	No. 22	No. 24	No. 27
26x 96	26x 72	26x 96	26x108	26x 96
26x120	26x 84	26x108	26x120	26x120
	26x 96	26x120	26x144	
No. 18	26x108		No. 26	No. 28
26x 72	26x120		26x 72	26x 72
26x 84		No. 24	26x 84	26x 84
26x 96	No. 22	26x 72	26x 96	26x 96
26x108	26x 72	26x 84	26x108	26x108
26x120	26x 84	26x 96	26x120	26x120
			26x144	26x144

BLACK AND PAINTED

Gauge and Size	Gauge and Size	Gauge and Size	Gauge and Size	Gauge and Size
No. 16	No. 20	No. 22	No. 24	No. 27
26x 96	26x 84	26x 96	26x108	26x 96
26x120	26x 96	26x108	26x120	26x120
		26x108	No. 26	No. 28
No. 18	26x120		26x 72	26x 72
26x 96		No. 24	26x 84	26x 84
26x120	No. 22	26x 72	26x 96	26x 96
No. 20	26x 72	26x 84	26x108	26x108
26x 72	26x 84	26x 96	26x120	26x120

The above sheets are corrugated with standard 2½ inch corrugations, and cover 24 inches when placed in position, allowing for lap on each side.

We can furnish promptly in addition to the above, sheets of any special width or length corrugated with either 1½ inch or 2½ inch corrugations.

RIVETS, STEEL BALLS AND LINK BELT



Fig. 860A

TINNERS' RIVETS

Effective March 19, 1913

In Packages of 1,000		Price per 1,000		In Bulk Price per lb.	In Packages of 1,000		Price per 1,000		In Bulk Price per lb.
Size	Black	Metallic Tinned	Tin Plated	Black	Size	Black	Metallic Tinned	Tin Plated	Black
6 oz.	\$0.20	\$0.28	\$0.24	\$0.48	3½ lb.	.72	1.34	.99	.23
8 oz.	.22	.31	.26	.42	4 lb.	.79	1.49	1.09	.22
10 oz.	.24	.35	.29	.38	5 lb.	1.00	1.88	1.38	.22
12 oz.	.26	.39	.32	.35	6 lb.	1.12	2.17	1.57	.21
14 oz.	.28	.43	.35	.33	7 lb.	1.31	2.54	1.84	.21
1 lb.	.29	.47	.37	.30	8 lb.	1.50	2.90	2.10	.21
1¼ lb.	.32	.54	.42	.27	9 lb.	1.68	3.26	2.36	.21
1½ lb.	.37	.64	.49	.26	10 lb.	1.77	3.52	2.52	.20
1¾ lb.	.41	.72	.55	.25	12 lb.	2.06	4.16	2.96	.19½
2 lb.	.44	.79	.59	.24	14 lb.	2.40	4.85	3.45	.19½
2½ lb.	.56	1.00	.75	.24	16 lb.	2.77	5.57	3.97	.19½
3 lb.	.62	1.15	.85	.23					

List Extras—For oval or countersunk heads, shoulder and pointed or extra length rivets, add \$0.10 per 1000 to list price for each specialty.

Net Extras—For tin plating or copper plating, add \$0.01½ per pound to net price. For metallic tinning, add \$0.03½ per pound to net price. When "tinned" rivets are ordered, metallic tinned are furnished. For bright polishing after annealing, add \$0.25 net extra per cwt.

List Rebates—For 25 and 50 pound boxes, deduct \$0.02. For 100 pound boxes, deduct \$0.03 and for 100 and 200 pound kegs, deduct \$0.04 per pound from list price.

STEEL BALLS



Fig. 860B

Size inches	Price per 1,000	Size inches	Price per 1,000	Size inches	Price per 1,000	Size inches	Price per 1,000
1/16	\$4.00	2 1/8	\$56.00	1 1/8	\$320.00	2 3/8	\$1400.00
1/8	3.00	2 3/8	68.00	1 3/8	380.00	2 7/8	1700.00
3/16	1.50	2 7/8	80.00	1 7/8	440.00	3 1/8	1900.00
1/4	2.00	3 1/8	96.00	1 9/8	500.00	3 1/2	2100.00
5/16	2.40	3 1/2	110.00	1 11/8	550.00	3 3/4	2400.00
3/8	3.20	3 3/4	130.00	1 3/4	600.00	3 7/8	2800.00
7/16	4.00	3 7/8	150.00	1 7/4	650.00	4	3200.00
1/2	6.00	4	160.00	1 1/2	700.00	4 1/8	3800.00
5/8	8.00	4 1/8	180.00	1 5/8	780.00	4 1/4	4600.00
3/4	12.00	4 1/4	200.00	1 5/4	850.00	4 3/8	5600.00
7/8	14.00	4 3/8	240.00	1 1/2	920.00	4 1/2	6800.00
1	24.00	4 1/2	280.00	2	1000.00	4 3/4	8000.00
1 1/8	36.00	...	...	...	...	...	...

Note—Brass, bronze or bell metal take the same list price as steel balls, but not the same discount.

DETACHABLE LINK BELT



Fig. 410

Chain No.	25	32	33	34	35	42	45
Per foot	\$0.15	.15	.15	.15	.15	.17	.15
Couplers, per pair .....		.15	.18	.17	.17	.20	.21
Links in 10 feet.....	133	104	86	86	74	88	74
Chain No.	51	52	55	57	62	66	77
Per foot	\$0.21	.20	.18	.20	.25	.26	.27
Couplers, per pair .....	.20	.18	.18	.21	.25	.25	.21
Links in 10 feet....	104	80	74	52	73	60	52
Chain No.	85	88	93	95	103	108	110
Per foot	\$0.49	.48	.54	.59	.74	.70	.82
Couplers, per pair .....	.49	.31	.49	.60	.64	.87	1.02
Links in 10 feet	30	46	30	30	39	25½	37

FOR OTHER STYLES OF RIVETS, SEE INDEX

RIVETS

LIST OF BASE SIZES AND EXTRAS

Adopted March 7, 1905; April 18, 1906; October 15, 1912

Fig. 620A
Button HeadFig. 620B
Countersunk HeadFig. 620C
Flat HeadFig. 620D
Cone Head

BASE SIZES

Boiler Rivets, standard heads. $\frac{3}{4}$ inch diameter to $1\frac{1}{4}$ inch diameter inclusive. 2 inches to 5 inches in length inclusive.

Structural Rivets, standard heads. $\frac{3}{4}$ inch diameter to $1\frac{1}{4}$ inch diameter inclusive. 2 inch to 5 inches in length inclusive.

Above in kegs or bags, weighing approximately 200 to 300 pounds.

Standard Extras

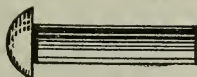
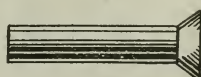
	Per 100 lbs.
1— $\frac{1}{2}$ inch and $\frac{3}{8}$ inch in diameters.....	\$0.50
2— $\frac{3}{8}$ inch and $\frac{1}{2}$ inch in diameters.....	.15
3—Rivets larger than $1\frac{1}{4}$ inches in diameter..	.25
4—Lengths 1 inch and shorter.....	.50
5—Lengths between 1 inch and 2 inches.....	.25
6—Lengths over 5 inches.....	.25
7—Flat Head Rivets.....	.25
8—All Standard Countersunk Head Rivets....	.25
9—Swell Necks.....	.25
10—Special Heads other than regular stand- ards, minimum charge.....	.25
11—Cold or Hot Made Solid Die Rivets, when specially specified.....	.25
12—Annealing Cold Made Rivets, $\frac{1}{2}$ inch diameter and larger.....	.35

	Per 100 lbs.
13—Small orders for miscellaneous sizes for less than two tons.....	.10
14—Rivets packed in 100 lb. packages.....	.10
15—No shipments made of less than 100 lbs. of one size. If customer must have small odd quan- tities less than 100 lbs., for each keg broken to fill such quantities, \$0.50 extra.	
16—All Cone and Countersunk Head Rivets to be charged at Boiler Rivet Price.	
17—Cost of testing and inspection, if any, to be at customer's expense.	
18—High Carbon, or Special Alloy Rivets, special extra price upon application.	

SPECIAL NOTICE

We carry a large stock of structural and boiler rivets at all times and can make prompt shipment. Orders should specify by pounds and designate size of package wanted—if large (200 to 300 lbs.) or small (100 lbs.)

IRON RIVETS IN BULK

Fig. 620E
Round HeadFig. 620F
Countersunk Head

Standard List of 1904. All Styles. Price per lb. in Less Lots than 25 lbs.

Size Wire	1 in. and longer	7/8 long	3/4 long	1/2 and 5/8	15/32 long	7/16 long	13/32 long	3/8 long	11/32 long	5/16 long	9/32 long	1/4 long	7/32 long	3/16 long	5/32 long	1/8 long	3/32 long
7/16	\$0.19	\$0.19 1/2	\$0.19 1/2	\$0.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3/8	.19	.19 1/2	.19 1/2	.20	\$0.21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11/32	.19 1/2	.20	.20	.20 1/2	.21	\$0.21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5/16	.19 1/2	.20	.20	.20 1/2	.21	.22	\$0.22	\$0.22	.....	.....	.....	.....	.....	.....	.....	.....	.....
9/32 { No. 1	.20	.20 1/2	.20 1/2	.21	.22	.23	.23	.23	.23	.23	.....	.....	.....	.....	.....	.....	.....
No. 2	.20	.20 1/2	.20 1/2	.21	.22	.23	.23	.23	.23	.23	\$0.24	.....	.....	.....	.....	.....	.....
No. 3	.20	.20 1/2	.20 1/2	.21	.22	.23	.23	.23	.23	.24	\$0.24	\$0.24	.....	.....	.....	.....	.....
1/4	.20	.20 1/2	.20 1/2	.21	.22	.23	.23	.23	.23	.24	.24	.24	\$0.25	\$0.25	.....	.....	.....
7/32 { No. 4	.21	.21 1/2	.21 1/2	.22	.23	.23	.24	.24	.24	.24	.24	.24	.25	.25	\$0.26	.....	.....
No. 5	.21	.21 1/2	.21 1/2	.22	.23	.24	.24	.24	.24	.24	.25	.26	.26	.27	.28	\$0.28	\$0.29
No. 6	.21	.21 1/2	.21 1/2	.22	.23	.24	.24	.25	.25	.26	.26	.27	.28	.29	.29	.29	.30
5/16	.21	.21 1/2	.21 1/2	.22	.23	.24	.24	.25	.25	.26	.26	.27	.28	.29	.30	.31	.32
5/32 { No. 7	.21	.21 1/2	.22	.23	.24	.24	.24	.25	.25	.26	.26	.27	.28	.29	.30	.31	.32
No. 8	.22	.22 1/2	.23 1/2	.24	.25	.25	.26	.26	.27	.27	.28	.29	.30	.31	.32	.33	.33
No. 9	.22	.23 1/2	.23 1/2	.24	.25	.26	.27	.27	.29	.29	.29	.30	.31	.33	.35	.36	.36
No. 10	.24	.24 1/2	.24 1/2	.25	.26	.27	.28	.29	.31	.33	.34	.34	.36	.39	.41	.43	.44
1/8 { No. 11	.25	.25 1/2	.25 1/2	.26	.28	.30	.32	.33	.34	.36	.37	.37	.39	.43	.46	.48	.51
No. 12	.26	.26 1/2	.26 1/2	.27	.30	.32	.34	.35	.36	.38	.40	.41	.42	.47	.51	.56	.61
3/32 { No. 13	.30	.30 1/2	.30 1/2	.31	.33	.36	.39	.40	.41	.43	.45	.46	.47	.51	.56	.61	.66
No. 14	.32	.32 1/2	.32 1/2	.33	.36	.41	.44	.46	.51	.56	.58	.61	.64	.64	.66	.69	.71

List Rebates—For 25 and 50 lb. lots deduct \$0.02 per lb. from list price. For 100 and 200 lb. kegs deduct \$0.04 per lb. from list price.

Originally adopted and effective December 1, 1896. Subject to change without notice.

Deductions for 100-lb. kegs, 2c per lb.

COMMON BRADS



Fig. 653A

Size	Length inches	Gage No.	Approx. No. to lb.	Extra over Base Price
2d	1	15	876	\$0.70
3d	1 1/4	14	568	.45
4d	1 1/2	12 1/2	316	.30
5d	1 3/4	12 1/2	271	.30
6d	2	11 1/2	181	.20
7d	2 1/4	11 1/2	161	.20
8d	2 1/2	10 1/4	106	.10
9d	2 3/4	10 1/4	96	.10
10d	3	9	69	.05
12d	3 1/4	9	64	.05
16d	3 1/2	8	49	.05
20d	4	6	31	Base
30d	4 1/2	5	24	Base
40d	5	4	18	Base
50d	5 1/2	3	16	Base
60d	6	2	11	Base

FLOORING BRADS



Fig. 653B

Size	Length inches	Gage No.	Approx. No. to lb.	Extra over Base Price
6d	2	11	157	\$0.20
7d	2 1/4	11	139	.20
8d	2 1/2	10	99	.10
8d	2 1/2	11	115	.25
9d	2 3/4	10	90	.10
10d	3	9	69	.05
12d	3 1/4	8	54	.05
16d	3 1/2	7	43	.05
20d	4	6	31	Base

Barbed nails furnished in all sizes and styles at
\$0.15 per 100 lbs. over smooth.

CASING NAILS



Fig. 653C

Size	Length inches	Gage No.	Approx. No. to lb.	Extra over Base Price
2d	1	15 1/2	1010	\$1.00
3d	1 1/4	14 1/2	635	.70
4d	1 1/2	14	473	.50
5d	1 3/4	14	406	.50
6d	2	12 1/2	236	.35
7d	2 1/4	12 1/2	210	.35
8d	2 1/2	11 1/2	145	.25
9d	2 3/4	11 1/2	132	.25
10d	3	10 1/2	94	.15
12d	3 1/4	10 1/2	87	.15
16d	3 1/2	10	71	.15
20d	4	9	52	.15
30d	4 1/2	9	46	.15
40d	5	8	35	.15

FINISHING NAILS



Fig. 653D

Size	Length inches	Gage No.	Approx. No. to lb.	Extra over Base Price
2d	1	16 1/2	1351	\$1.15
3d	1 1/4	15 1/2	807	.85
4d	1 1/2	15	584	.65
5d	1 3/4	15	500	.65
6d	2	13	309	.45
7d	2 1/4	13	238	.45
8d	2 1/2	12 1/2	189	.35
9d	2 3/4	12 1/2	172	.35
10d	3	11 1/2	121	.25
12d	3 1/4	11 1/2	113	.25
16d	3 1/2	11	90	.25
20d	4	10	62	.25

SMOOTH BOX NAILS

Fig. 653E

Size	Length inches	Gage No.	Approx. No. to lb.	Extra over Base Price
2d	1	15 1/2	1010	\$1.00
3d	1 1/4	14 1/2	635	.70
4d	1 1/2	14	473	.50
5d	1 3/4	14	406	.50
6d	2	12 1/2	236	.35
7d	2 1/4	12 1/2	210	.35
8d	2 1/2	11 1/2	145	.25
9d	2 3/4	11 1/2	132	.25
10d	3	10 1/2	94	.15
12d	3 1/4	10 1/2	88	.15
16d	3 1/2	10	71	.15
20d	4	9	52	.15
30d	4 1/2	9	46	.15
40d	5	8	35	.15

BARBED BOX NAILS

Size	Length inches	Gage No.	Approx. No. to lb.	Extra over Base Price
2d	1	15 1/2	1010	\$1.15
3d	1 1/4	14 1/2	635	.85
4d	1 1/2	14	473	.65
5d	1 3/4	14	406	.65
6d	2	12 1/2	236	.50
7d	2 1/4	12 1/2	210	.50
8d	2 1/2	11 1/2	145	.40
9d	2 3/4	11 1/2	132	.40
10d	3	10 1/2	94	.30
12d	3 1/4	10 1/2	88	.30
16d	3 1/2	10	71	.30
20d	4	9	52	.30
30d	4 1/2	9	46	.30
40d	5	8	35	.30

Barbed nails furnished in all sizes and styles at
\$0.15 per 100 lbs. over smooth.

FOR HAMMERS, CLAW BARS AND NAIL PULLERS, SEE INDEX

TOBACCO NAILS

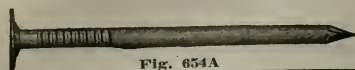


Fig. 654A

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
4d	1½	12	274	\$0.30
5d	1¾	12	235	.30
6d	2	11	157	.20
7d	2¼	11	139	.20
8d	2½	10	99	.10
9d	2¾	10	90	.10
10d	3	9	69	.05

Also furnished in needle point, \$0.15 advance.

BOAT NAILS, LIGHT

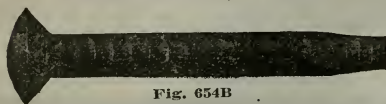


Fig. 654B

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
4d	1½	12	82	\$1.05
6d	2	11	62	.95
8d	2½	10	50	.85
10d	3	9	22	.75
12d	3¼	8	20	.75
16d	3½	7	18	.75
20d	4	6	16	.75

BOAT NAILS, HEAVY

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
4d	1½	12	44	\$1.05
6d	2	11	32	.95
8d	2½	10	26	.85
10d	3	9	14	.75
12d	3¼	8	13	.75
16d	3½	7	12	.75
20d	4	6	10	.75

Barbed nails furnished in all sizes and styles at \$0.15 per 100 lbs. over smooth.

BARBED ROOFING NAILS

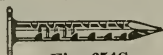


Fig. 654C

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
¾	¾	13	714	\$0.75
7/8	7/8	12	469	.65
1	1	12	411	.60
1½	1½	12	365	.60
1¾	1¾	11	251	.55
1¾	1¾	11	230	.55
1½	1½	10	176	.45
1¾	1¾	10	151	.45
2	2	9	103	.35

SLATING NAILS

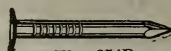


Fig. 654D

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
2d	1	12	411	\$0.80
3d	1¼	10½	225	.60
4d	1¾	10½	187	.40
5d	1¾	10	142	.40
6d	2	9	103	.30

SHINGLE NAILS

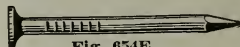


Fig. 654E

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
3d	1¼	13	429	\$0.45
3½d	1¾	12½	345	.40
4d	1½	12	274	.30

Barbed nails furnished in all sizes at \$0.15 per 100 lbs. over smooth.

FENCE NAILS

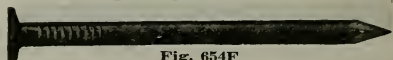


Fig. 654F

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
5d	1¾	10	142	\$0.30
6d	2	10	124	.20
7d	2¼	9	92	.20
8d	2½	9	82	.10
9d	2¾	8	62	.10
10d	3	7	50	.05
12d	3¼	6	40	.05
16d	3½	5	30	.05
20d	4	4	23	Base

CLINCH NAILS

Bright or Annealed

Bright Clinch Nails will be Furnished Unless Otherwise Ordered

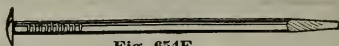


Fig. 654E

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
2d	1	14	710	\$1.05
3d	1¼	13	429	.85
4d	1½	12	274	.65
5d	1¾	12	235	.65
6d	2	11	157	.55
7d	2¼	11	139	.55
8d	2½	10	99	.45
9d	2¾	10	90	.45
10d	3	9	69	.35
12d	3¼	9	62	.35
16d	3½	8	49	.35
20d	4	7	37	.35

Barbed nails furnished in all sizes and styles at \$0.15 per 100 lbs. over smooth.

HINGE NAILS, HEAVY

TRACK NAILS, COUNTERSUNK HEAD
Diamond or Chisel Point. Will be Furnished
with Chisel Point Unless Diamond Point
is Specified

In Ordering Hinge Nails Specify Whether Oval
or Countersunk Head, Light or Heavy,
Annealed or Bright



Fig. 657A. Oval Head

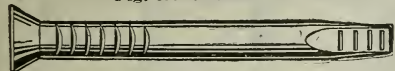


Fig. 657B. Countersunk

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
4d	1½	¼	50	\$0.80
6d	2	¼	38	.70
8d	2½	¼	30	.60
10d	3	⅜	12	.50
12d	3¼	⅜	11	.50
16d	3½	⅜	10	.50
20d	4	⅜	9	.50

HINGE NAILS, LIGHT

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
4d	1½	⅜	82	\$0.80
6d	2	⅜	62	.70
8d	2½	⅜	50	.60
10d	3	¼	25	.50
12d	3¼	¼	23	.50
16d	3½	¼	22	.50
20d	4	¼	19	.50

Barbed Nails furnished in all sizes and styles
at \$0.15 per 100 lbs. over smooth.

BARREL NAILS

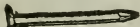


Fig. 657C

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
5/8	¾	15½	1615	\$1.35
¾	¾	15½	1346	1.00
7/8	¾	14½	906	.85
1	1	14½	775	.70
1½	1½	14½	700	.60
1¾	1¾	14	568	.50
1¾	1¾	13	400	.40
1½	1½	13	367	.30

FINE NAILS

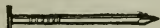


Fig. 657D

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
2d	1	16½	1351	\$1.00
3d	1½	15	778	.50
4d	1½	14	473	.50
*2d	1	17	1560	1.10
*3d	1½	16	1015	.65

*Extra fine.

BARBED CAR NAILS, HEAVY

In Ordering Car Nails be Sure to Specify Whether
Light or Heavy, Annealed or Bright,
Oval or Flat Head

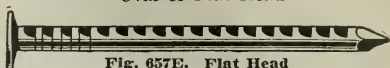


Fig. 657E. Flat Head

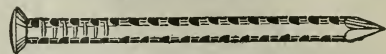


Fig. 657F. Oval Head

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
4d	1½	10	165	\$0.45
5d	1¾	9	118	.45
6d	2	9	103	.35
7d	2¼	8	76	.35
8d	2½	8	69	.25
9d	2¾	7	54	.25
10d	3	7	50	.20
12d	3¼	6	42	.20
16d	3½	6	35	.20
20d	4	5	26	.15
30d	4½	5	24	.15
40d	5	4	18	.15
50d	5½	3	15	.15
60d	6	3	13	.15

BARBED CAR NAILS, LIGHT

Size	Length inches	Gauge No.	Approx. No. to lb.	Extra over Base Price
4d	1½	12	274	\$0.45
5d	1¾	10	142	.45
6d	2	10	124	.35
7d	2¼	9	92	.35
8d	2½	9	82	.25
9d	2¾	8	62	.25
10d	3	8	57	.20
12d	3¼	7	50	.20
16d	3½	7	43	.20
20d	4	6	31	.15
30d	4½	6	28	.15
40d	5	5	21	.15
50d	5½	4	17	.15
60d	6	4	15	.15

SMOOTH FOUNDRY NAILS

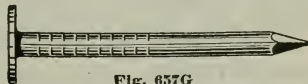


Fig. 657G

Length inches	No. 8 ½ Inch Head	No. 9 ½ Inch Head	No. 10 ½ Inch Head	No. 11 ½ Inch Head
¾	\$0.60	\$0.70	\$0.80	\$0.90
7/8	.50	.60	.70	.80
1	.40	.50	.60	.70
1½	.35	.45	.55	.65
1¾	.30	.40	.50	.60
1½	.25	.35	.45	.55
1¾	.25	.35	.45	.55
2	.20	.25	.35	.45
2¼	.15	.20	.30	.40
2½	.15	.20	.30	.40
2¾	.10	.15	.25	.35
3 and longer	.05	.10	.20	.30

Barbed Foundry Nails \$0.15 advance.

STERILIZED BLUED LATH NAILS



Fig. 656A

Size	Length inches	Gage No.	Approx. Number to lb.	Extra over Base Price
2d	1	16 1/2	1351	\$1.25
2d light	1	17	1560	1.35
3d	1 1/8	15	778	.75
3d light	1 1/8	16	1015	.90

Lathers carry the nails in the mouth while at work and it is, therefore, from the standpoint of health sanitation, necessary to have the nails free from all injurious substances. Polished or bright nails cannot be made or kept entirely clean owing to process of manufacture as well as the effect of atmospheric conditions.

BERRY-BOX NAILS

Fig. 656B

Diamond or Needle Point, Barbed Flat Head

Size inches	Length inches	Gage No.	Approx. Number to lb.	Extra over Base Price
3/4	3/4	16	1500	\$1.35
7/8	7/8	16	1300	1.25
1	1	16	1150	1.15
1 1/8	1 1/8	16	1010	1.15
1 1/4	1 1/4	16	910	1.00

Unless otherwise specified, barbed needle points, will be furnished.

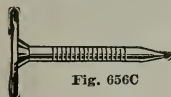


Fig. 656C

AMERICAN FELT
ROOFING NAILS

Count per lb.	Length inches	Gage No.	Diameter of Heads inches
180	1	12	5/8
195	7/8	12	5/8
162	1	11	5/8
175	7/8	11	5/8

A large head nail especially designed for use in laying prepared roofing material. This nail, having an extra large head and thin shank, meets admirably the requirements for placing all prepared roofing. The head is reinforced on the shank so that it will not easily pull or break off.

LARGE HEAD
BARBED ROOFING
NAILS

Approximate Number of Nails to the Pound

Size	3/4 in.	7/8 in.	1 in.	1 1/8 in.	1 1/4 in.	1 1/2 in.	1 3/4 in.
No. 8— 1/2 inch head....	205	179	158	142	128	108	93
No. 9— 1/2 inch head....	252	219	193	173	156	131	113
No. 9 1/2— 1/2 inch head....	266	231	205	184	167	141	122
No. 10— 7/8 or 1/2 inch head	290	253	224	201	183	154	133

Sold on standard nail base, with special extras.

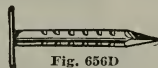


Fig. 656D

CIGAR BOX NAILS



Cigar Box Nails are made with short square point, or if so ordered with short round point. Bright, barbed or smooth. Made in sizes 1/2 inch, 5/8 inch, 3/4 inch and 7/8 inch of either No. 18, No. 19 or No. 20 gage. Packed in kegs, 25 lb. boxes and in 1 lb., 5 lb. or 10 lb. packages. Flat or oval heads, as ordered.

Oval head, \$0.15 per 100 lbs. extra.

BLUED HOOP FASTENERS

No. 0 No. 1 No. 2 No. 3

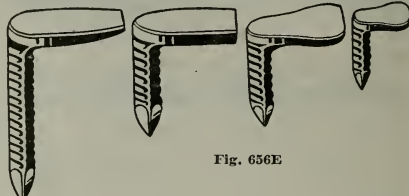


Fig. 656E

118 to lb. 212 to lb. 308 to lb. 976 to lb.
1 in. long 9/16 in. long 1/2 in. long 3/4 in. long
No. 6 gage No. 9 gage No. 10 1/2 gage No. 13 gage

Packed 100 lbs. or 110 lbs. to the keg.

Also furnished galvanized.

SHEET ROOFING FASTENERS

Curved or Flat Head. Illustration shows Curved Head

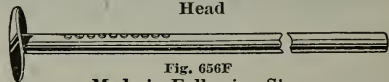


Fig. 656F

Made in Following Sizes:

Length inches	Diameter	Approximate Count per lb.
6	1/8 inch	46
7	1/8 inch	40
8	7/8 inch	34
9	7/8 inch	31
10	7/8 inch	28
12	7/8 inch	23
14	7/8 inch	20
8	No. 10 gage	30
9	No. 10 gage	27
10	No. 10 gage	24
12	No. 10 gage	20

Annealed or galvanized.



Fig. 656G

PLASTER BOARD
NAILS

A smooth nail with diamond point and 1/2 inch flat head.

Lengths 1, 1 1/4 and 1 1/2 inch. Size Nos. 9, 10 and 11.

9 and 10, 1/2 inch head. 11, 7/8 inch head.

Sold on standard nail base, with special extras.

MEAT TAG FASTENERS

Packed 1000 in a carton, 150 cartons to the case. Also in kegs.

Approximately 1000 to the pound.

Coppered or tinned.

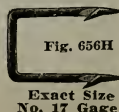
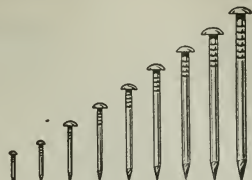


Fig. 656H

Exact Size
No. 17 Gage

STEEL ESCUTCHEON PINS



Length (Inches)	3/16	1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
Wire Gauge													
No. 10.....													
No. 11.....													
No. 12.....													
No. 13.....													
No. 14.....													
No. 15.....													
No. 16.....													
No. 17.....													
No. 18.....													
No. 19.....													
No. 20.....													
No. 21.....													
No. 22.....													

Use Miscellaneous Wire
Nail List plus \$0.04 per lb.
extra for the needle points
and round heads of the
escutcheon pins.

Extras

Add to list \$0.04 per lb. for $\frac{1}{2}$ lb. paper boxes.

Add to list \$0.08 per lb. for $\frac{1}{4}$ lb. paper boxes.

For sizes not appearing on the list, use the list prices for the desired gage in the nearest shorter length.

Pins heavier than listed at special net prices, according to quantity.

Tinned, galvanized, coppered and brass plated pins at special prices.

Deduction from List Prices

For 25 lb. and 50 lb. boxes deduct \$0.01 per lb. from list prices.

For pins in 100 lb. kegs deduct \$0.02 per lb. from list prices.

CLOUT NAILS



Side View, Showing
Thickness of Point

Side View, Showing
Width of Point

Length inches	Gauge	Approximate Number to Pound	Extra Over Standard Base Prices
$\frac{3}{4}$	No. 15	1160	\$1.30
$\frac{7}{8}$	No. 14	808	1.15
1	No. 14	705	1.00
$1\frac{1}{8}$	No. 14	628	.90
$1\frac{1}{4}$	No. 13	423	.80
$1\frac{3}{8}$	No. 13	390	.75
$1\frac{1}{2}$	No. 13	350	.60

BROOM NAILS

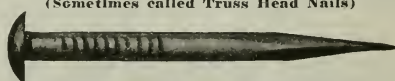
Are usually $\frac{5}{8}$ inch or $\frac{3}{4}$ inch long, made from No. 14 or No. 15 wire, with flat or star heads.

SHADE NAILS

Needle pointed, slightly countersunk, flat head, smooth nails, $\frac{3}{8}$ inch diameter heads, No. 13 gauge wire.

OVAL HEAD HINGE NAILS

(Sometimes called Truss Head Nails)



Large Oval Head, Long Square Point

$\frac{3}{8}$ inch and $\frac{1}{4}$ inch by $1\frac{1}{2}$ inch, $1\frac{3}{4}$ inch,
2 inch, $2\frac{1}{2}$ inch, $2\frac{3}{4}$ inch and 3 inch.

Packed in Kegs, and 50, 25, 10 and 5 Lb. Boxes

Packed in Kegs, and 50, 25, 10 and 5
Pound Boxes

Approximate Number Per Lb.

	3/16-inch	1/4-inch
$1\frac{1}{2}$ inch.....	81	47
$1\frac{3}{4}$ inch.....	68	41
2 inch.....	61	33
$2\frac{1}{4}$ inch.....	54	31
$2\frac{1}{2}$ inch.....	48	28
$2\frac{3}{4}$ inch.....	45	26
3 inch.....	41	24

BASKET NAILS

Are usually $\frac{5}{8}$ inch or $\frac{3}{4}$ inch long, made from No. 18 wire nails and sold on Miscellaneous List and Discount.

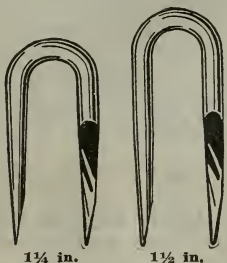
APPROXIMATE NUMBER OF WIRE NAILS PER POUND

[illegible]

These approximate numbers are an **average** only, and the figures given may be varied either way, by changes in the dimensions of the heads or points. Brads and no-head nails will run more to the pound than table shows, and large or thick headed nails will run less.

FENCE STAPLES

Full Size



Annealed, polished or galvanized. When made of No. 9 wire, base prices apply. Also made of Nos. 8, 10, 11, 12 and 13 wire, for which extras are charged. Packed in kegs containing 100 lbs. at base price. Also packed in 5 lb., 10 lb., 15 lb., 25 lb. and 50 lb. boxes, for which extras are charged.

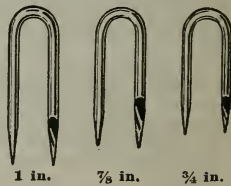
Prices on staples up to 3 inches in length, special wide spread staples or gages not listed, furnished on request.

Length	Approximate No. to Lb. No. 9 Gage
$\frac{7}{8}$	120
1	108
$1\frac{1}{8}$	96
$1\frac{1}{4}$	87
$1\frac{1}{2}$	72
$1\frac{3}{4}$	65
2	58

POULTRY NETTING STAPLES

Full Size Cuts.

Galvanized

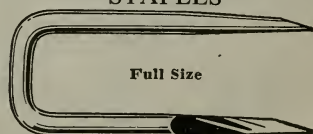


In bulk or packed in 100 lb. kegs, also in 50 lb., 25 lb., 10 lb. or 5 lb. wooden boxes; also in 5 or 10 lb. paper boxes; also in $\frac{1}{4}$ lb., $\frac{1}{2}$ lb. or 1 lb. papers.

All 5 and 10 lb. paper packages are packed in wooden boxes for shipment.

Number of Poultry Netting Staples to the Pound	
$\frac{3}{4}$ inch, No. 14.....	480
$\frac{7}{8}$ inch, No. 14.....	416
1 inch, No. 14.....	352

WIDE TOP OR RIBBON WIRE STAPLES



For stapling flat twisted ribbon wire. Cut from No. 9 wire in 1½ inch, 1¾ inch and 2 inch lengths. Price same as fence staples.



GALVANIZED WIRE HOOP STAPLES

Used for Putting on Wire Hoops

Number of Galvanized Wire
Hoop Staples to the pound.

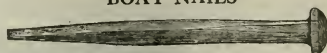
$\frac{5}{8}$ inch, No. 14.....	568
$\frac{1}{2}$ inch, No. 14.....	610

GALVANIZED WIRE BOAT NAILS



No.	Length	100 lb. Kegs	
60d	6 inches; base	per lb.	
50d	5 1/2 inches; base	"	
40d	5 inches; base	"	
30d	4 1/2 inches; base	"	
20d	4 inches; base	"	
16d	3 1/2 inches	extra	\$0.05
12d	3 1/4 inches	"	.05
10d	3 inches	"	.05
9d	2 3/4 inches	"	.10
8d	2 1/2 inches	"	.10
7d	2 1/4 inches	"	.20
6d	2 inches	"	.20
5d	1 3/4 inches	"	.30
4d	1 1/2 inches	"	.30
3 1/2 d	1 1/8 inches	"	.40
3d	1 1/4 inches	"	.45
2d	1 inches	"	.75

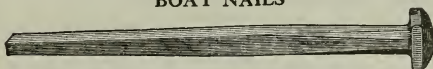
ROUND HEAD, CHISEL POINT BOAT NAILS



Size	per lb.	
3/4 inch	\$0.23	
1 inch	.20	
1 1/8 inch	.18	
1 1/4 inch	.17	
1 1/2 inch	.17	
1 3/4 inch	.16	
2 inch	.16	
2 1/4 inch	.15	
2 1/2 inch	.15	
2 3/4 inch	.15	
3 inch	.15	
3 1/4 inch	.14	
3 1/2 inch	.14	
3 3/4 inch	.13 1/2	
4 inch	.13 1/2	

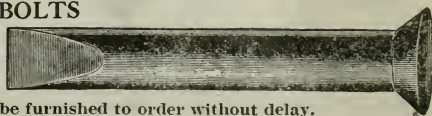
ROUND HEAD, BLUNT POINT

BOAT NAILS



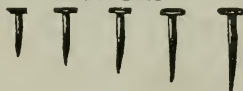
Size	per lb.		Size	per lb.	
3/4 inch	\$0.18		1 1/2 inch	\$0.12	
7/8 inch	.15		1 3/4 inch	.12	
1 inch	.13		2 to 2 1/4 inch	.12	
1 1/8 inch	.13		2 1/2 to 2 3/4 inch	.11 1/2	
1 1/4 inch	.12		3 to 6 inch	.11 1/2	

DRIFT BOLTS



Any style or shape of Drift Bolts can be furnished to order without delay.
Prices upon receipt of specifications.

TACKS



Length	inch	7/16	8/16	9/16	10/16	11/16	12/16	13/16
Size	ounce	4	6	8	10	12	14	16
Silver or Blued Steel								
2 oz. papers	per doz.	....	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50
4 oz. papers	"	....	2.70	2.70	2.70	2.70	2.70	2.70
1/4 wt.	"	\$0.95	1.20	1.50	1.80	2.10	2.40	2.70
1/2 wt.	"	1.60	2.10	2.70	3.35	4.00	4.75	5.45
Bulk (In 1 and 5-lb. papers and 10-lb. wooden boxes)	per lb.	1.46	1.36	1.26	1.21	1.16	1.16	1.16
Tinned or Galvanized								
2 oz. papers	per doz.	....	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
4 oz. papers	"	....	3.70	3.70	3.70	3.70	3.70	3.70
1/4 wt.	"	\$1.35	1.60	2.00	2.35	2.70	3.20	3.60
1/2 wt.	"	2.45	3.00	3.70	4.50	5.35	6.15	6.70
Bulk (In 1 and 5-lb. papers and 10-lb. wooden boxes)	per lb.	2.01	1.81	1.66	1.61	1.56	1.56	1.56

In ordering drift bolts be sure and specify size, style and quantity desired. Allow three days' time in ordering drift bolts.

SQUARE BOAT SPIKES

In kegs of 200 lbs.



		Extras: Effective Feb. 1, 1911	
1/4 inch square, 3 to 3 1/2 inches long.....	per 100 lbs.	\$1.00	
1/4 inch square, 4 to 8 inches long.....	"	.75	
1/2 inch square, 3 1/2 inches long.....	"	.70	
1/2 inch square, 4 to 8 inches long.....	"	.45	
3/8 inch square, 3 to 3 1/2 inches long.....	"	.55	
3/8 inch square, 4 to 12 inches long.....	"	.30	
1/2 inch square, 6 to 12 inches long.....	"	.20	
1/2 inch square, 6 to 12 inches long.....	"	.15	
1/2 inch square, 8 to 14 inches long.....	"	.15	

Approximate Number of Boat Spikes to a Keg of 200 Lbs.

Length	3	4	5	6	7	8	9	10	11	12	14	16
1/8 inch square..	.....	.....	.....	.....	.....	260	240	220	205	190	175	160
1/2 inch square..	.....	.....	.....	450	375	335	300	275	260	240	.....	.....
1/2 inch square..	.....	.....	.....	600	590	510	400	360	320	230	.....	.....
3/8 inch square..	1320	1140	940	800	650	600	525	475	.....	.....	.....	.....
1/2 inch square..	1660	1360	1230	1175	990	880	.....	.....	.....	.....	.....	.....
1/4 inch square..	3000	2375	2050	1825	.....	.....	.....	.....	.....	.....	.....	.....

NOTE—The above is given as approximate, and we are not to be bound in any way to protect these figures.

"PULL-EASY" NAIL COLLARS



The Collar



On the Nail



In Place



In the Claw

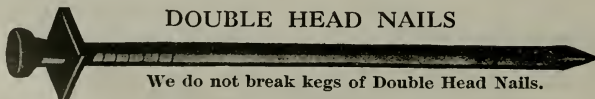
"Pull-Easy" Nail Collars save time, labor and lumber. The illustrations above show the manner of use on all sizes of common nails from 4d to 60d. They are being used on many large jobs for nailing concrete forms, towers and scaffolding.

Made in three sizes: No. 1 Collar is for use with nails from 4d to 10d; No. 2 Collar is for use with nails from 10d to 20d; No. 3 Collar is for use with nails from 30d to 60d. Packed in packages containing 1,000, 5,000, 10,000, 30,000, 40,000 and 50,000.

"Pull-Easy" Nail Collar No. 1.....per 1,000 \$.....

"Pull-Easy" Nail Collar No. 2.....".....

"Pull-Easy" Nail Collar No. 3.....".....



DOUBLE HEAD NAILS

We do not break kegs of Double Head Nails.

For use in building of concrete forms, towers and scaffolding. Preferred by many contractors for the ease with which they are handled, the square head being a part of the nail.

20d, Double Head Nails, full kegs..... each \$.....

16d, Double Head Nails, full kegs..... ".....

10d, Double Head Nails, full kegs..... ".....

8d, Double Head Nails, full kegs..... ".....

6d, Double Head Nails, full kegs..... ".....

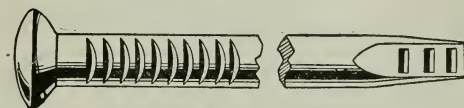
WE CARRY THE LARGEST STOCK OF THE ABOVE SPECIALTIES IN THE WEST

SPIKES

Made Only in Flat Head, Diamond Point and Oval Head, Chisel Point.



Flat Head, Diamond Point

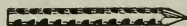


Oval Head, Chisel Point

Size	Length and Gauge			Approximate No. to Pound	Extra over Base Price
10d.....	3	inch	No. 6	41	\$0.10
12d.....	3 1/4	inch	No. 6	38	.10
16d.....	3 1/2	inch	No. 5	30	.10
20d.....	4	inch	No. 4	23	.10
30d.....	4 1/2	inch	No. 3	17	.10
40d.....	5	inch	No. 2	13	.10
50d.....	5 1/2	inch	No. 1	10	.10
60d.....	6	inch	No. 1	9	.10
7 inch.....	7	inch	7/8 inch	7	.10
8 inch.....	8	inch	3/8 inch	4	.10
9 inch.....	9	inch	3/8 inch	3 1/2	.10
10 inch.....	10	inch	3/8 inch	3	.25
12 inch.....	12	inch	3/8 inch	2 1/2	.25

Special gages \$0.10 additional.

BARBED DOWEL PINS



No. 8 Standard.

Size	Length and Gauge			Approximate No. to Pound	Extra over Base Price
5/8 inch.....	5/8	inch	No. 8	290	\$1.25
3/4 inch.....	3/4	inch	No. 8	250	1.00
7/8 inch.....	7/8	inch	No. 8	210	.85
1 inch.....	1	inch	No. 8	190	.70
1 1/8 inch.....	1 1/8	inch	No. 8	165	.60
1 1/4 inch.....	1 1/4	inch	No. 8	150	.60
1 3/8 inch.....	1 3/8	inch	No. 8	130	.60
1 1/2 inch.....	1 1/2	inch	No. 8	120	.60

Barbed nails furnished in all sizes and styles at 15c per 100 lbs. over smooth.

RAILROAD SPIKES



In kegs of 200 lbs.

We carry on hand at all times a very large stock of railroad spikes in all sizes and are prepared to make immediate shipment of one keg or a carload.

Extras:
Effective Feb. 1, 1911
Subject to change without
notice.

$\frac{1}{4}$ inch square, $1\frac{1}{4}$ inches long.....	per 100 lbs.	\$1.50
$\frac{1}{4}$ inch square, $1\frac{1}{2}$ inches long.....	"	1.25
$\frac{1}{4}$ inch square, 2 to $2\frac{1}{2}$ inches long.....	"	1.00
$\frac{1}{4}$ inch square, 3 inches long.....	"	.85
$\frac{5}{16}$ inch square, 2 inches long.....	"	.80
$\frac{5}{16}$ inch square, $2\frac{1}{2}$ to 4 inches long.....	"	.60
$\frac{3}{8}$ inch square, 2 inches long.....	"	.50
$\frac{3}{8}$ inch square, $2\frac{1}{2}$ inches long.....	"	.40
$\frac{3}{8}$ inch square, 3 to $4\frac{1}{2}$ inches long.....	"	.30
$\frac{7}{16}$ inch square, 3 inches long.....	"	.30
$\frac{7}{16}$ inch square, $3\frac{1}{2}$ to $4\frac{1}{2}$ inches long.....	"	.20
$\frac{1}{2}$ inch square, $2\frac{1}{2}$ inches long.....	"	.20
$\frac{1}{2}$ inch square, 3 to 5 inches long.....	"	.10
$\frac{9}{16}$ inch square, $4\frac{1}{2}$ to $5\frac{1}{2}$ inches long.....		Base

Reversed points, $\frac{1}{4}$ cent per lb. extra.

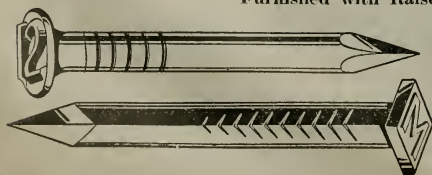
Other than regular sizes shown above can be furnished at a slight extra charge.

Approximate Number of Railroad Spikes to a Keg of 200 Pounds

Size Measured Under Head	Approximate Number per Keg	Ties 2 Feet Between Centers, 4 Spikes per Tie, Makes per Mile—	Rail Used (Weight per Yard)
$5\frac{1}{2} \times \frac{9}{16}$	360	5,870 lbs.—29 $\frac{1}{4}$ kegs	45 to 70
5 $\times \frac{11}{16}$	400	5,170 " —26 "	40 to 56
5 $\times 1\frac{1}{2}$	450	4,660 " —23 $\frac{1}{2}$ "	35 to 40
$4\frac{1}{2} \times 1\frac{1}{2}$	530	3,960 " —20 "	28 to 35
4 $\times 1\frac{1}{2}$	600	3,520 " —17 $\frac{3}{4}$ "	24 to 35
$4\frac{1}{2} \times \frac{7}{16}$	680	3,110 " —15 $\frac{1}{2}$ "	} 20 to 30
4 $\times \frac{7}{16}$	720	2,940 " —14 $\frac{3}{4}$ "	
$3\frac{1}{2} \times \frac{7}{16}$	900	2,350 " —11 $\frac{3}{4}$ "	} 16 to 25
4 $\times \frac{3}{8}$	1,000	2,090 " —10 $\frac{1}{2}$ "	
$3\frac{1}{2} \times \frac{3}{8}$	1,190	1,780 " —9 "	} 16 to 26
3 $\times \frac{3}{8}$	1,240	1,710 " —8 "	
$2\frac{1}{2} \times \frac{3}{8}$	1,342	1,575 " —7 $\frac{7}{8}$ "	12 to 16

TIE AND POLE DATING OR MARKING NAILS

Furnished with Raised or Depressed Figures



	Count per lb. Bright Galv.
Standard size, round, $2\frac{1}{2}$ -in. No. 3 gauge.....	30 27
Standard size, square, $2\frac{1}{2} \times 1\frac{1}{4}$ in.....	23 20
Bright, galvanized or tinned.	

Prices quoted on application

FOR SPIKE MAULS, HAMMERS AND SLEDGES, SEE INDEX

FINE STEEL WIRE BRUSHES—MOULDERS' BRUSHES STEEL WIRE GEAR BRUSHES



Fig. 21

Handled Casting Brushes

Made of Flat Tempered Steel Wire

Especially adapted for cleaning teeth in cast gears.

No. 15.	4x10 rows, length of wire 3 inches, width of block 2 1/4 inches.	List per Dozen..	\$3.95
No. 20.	4x10 rows, length of wire 4 inches, width of block 2 1/4 inches.	List per Dozen..	4.25
No. 16.	5x10 rows, length of wire 3 inches, width of block 2 5/8 inches.	List per Dozen...	4.35
No. 21.	5x10 rows, length of wire 4 inches, width of block 2 5/8 inches.	List per Dozen..	4.75

We can furnish these brushes with any required length of wire or any number of rows.



Fig. 7

Made of first quality flat tempered steel wire on well finished solid hardwood blocks, strong and durable, and will withstand the severest use.

Heavy

No. 2.	4x10 rows, length of wire 3 inches, block 7 3/4 x 2 1/4 inches.	List per Dozen.....	\$3.35
No. 3.	4x10 rows, length of wire 4 inches, block 7 3/4 x 2 1/4 inches.	List per Dozen.....	3.65
No. 5.	5x10 rows, length of wire 2 inches, block 7 3/4 x 2 5/8 inches.	List per Dozen.....	3.25
No. 6.	5x10 rows, length of wire 3 inches, block 7 3/4 x 2 5/8 inches.	List per Dozen.....	3.75
No. 7.	5x10 rows, length of wire 4 inches, block 7 3/4 x 2 5/8 inches.	List per Dozen.....	4.20

STEEL WIRE ROUND CASTING BRUSHES



Fig. 10

MOULDERS' SOFT BRUSHES

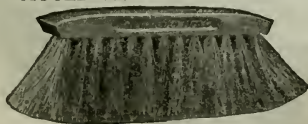


Fig. 2058

No. 2058.	Pure Black Hair, length of stock 3 1/4 inches, 5 rows, block 8 3/8 x 2 3/8 inches.	List per Dozen	\$7.50
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MOULDERS' BRUSHES

Made of Flat Tempered Steel Wire

Adapted for cleaning cast iron car wheels, etc.

No. 10.	Block 3 inches diameter, length of wire 5 inches, length over all 12 inches.	List per Dozen	\$4.75
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MOULDERS' SQUARE END HARD BRUSHES



Fig. 204

Solid Blocks 8 1/2 x 2 1/2 inches, Rocker Face

No. 204.	Grey or Black Horse Hair, length of stock, 1 1/2 inches, 6 rows.	List per Dozen	\$7.00
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FOR GENERAL LINE OF FOUNDRY AND MOULDERS' SUPPLIES, SEE INDEX

FINE STEEL WIRE BRUSHES

These brushes take the place of sand paper, steel wool and similar abrasives and enable the user to do quicker and better work. They are very durable, being made of the best tempered steel wire.

ECONOMY WIRE WHEEL BRUSHES

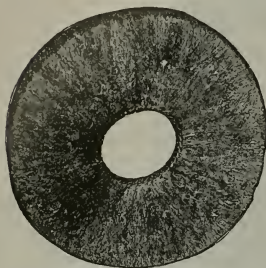


Fig. 3314. One Section of Filler

Patented
June 5th
1906

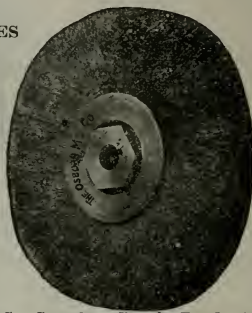


Fig. 50C. Complete Brush, Ready for Use

Fig. 50C "ECONOMY" STEEL WIRE WHEEL BRUSHES COMPLETE
Including Metal Hubs

No.	Diam. of Brush inches	Width of Face inches	Diam. of Hub inches	Bearing on Shaft inches	Approximate Weight lbs.	Wire No.	List, each
50C	15	2½	6¼	2½	16	33	\$12.00
53C	12	2	5	2¾	9½	34	10.50
54C	10	1¾	5	2¾	8¾	35	9.50
55C	8	1½	4	2	4½	36	8.50

When ordering, state size of arbor hole required.

No. 50C regularly made for arbors 2 inches in diameter and smaller.

Nos. 53C and 54C for arbors 1¼ inches diameter and smaller.

No. 55C for arbors 1 inch diameter and smaller.

For larger sized arbors, there will be an additional cost.

To insure best results and longest service, "Economy" Wire Wheel Brushes, when used on figured castings, should be speeded as follows:

	Revolutions per minute		Revolutions per minute
No. 50C. 15 inches diameter.....	1200 to 1600	No. 54C. 10 inches diameter.....	1800 to 2100
No. 53C. 12 inches diameter.....	1500 to 1800	No. 55C. 8 inches diameter.....	2100 to 2400

Where employed on plain, smooth surfaces, they should be run at somewhat higher speed.

Operators should be instructed not to use too much pressure in applying the work to the brush. If run at proper speed, the wire will stand out stiff, presenting a sharp scratching surface and the brush will give better results and last much longer where the work is applied moderately.

Fig. 3314 STEEL WIRE SECTIONS FOR "ECONOMY" WHEEL BRUSHES

No.	Style	For Hub, No.	Diam. Sections inches	Sections per set	Wire No.	List, per set
3314	Steel	50C	15	6	33	\$6.00
3411	Steel	53C	12	5	34	5.00
358	Steel	54C	10	5	35	4.50
364	Steel	55C	8	4	36	3.60

WIRE GAUGES

To avoid confusion, when referring to special sizes of wire please specify, in addition to the gauge number, which one of the several common "Standard" gauges you refer to.

Our Standard Table for steel wire for these brushes is the Washburn and Moen Gauge.

HAND CASTING BRUSHES

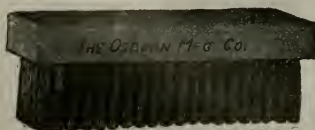


Fig. 1780

No. 1780. Block 7¼x2¼ inches, 6x19 rows, length of wire 1¾ inches.

List, per dozen.....\$5.65



Fig. 1779

No. 1779. Block 7x3 inches, 9x22 rows, length of wire 1¼ inches, fine wire, heavy.

List, per dozen.....\$5.35

PUSH BROOMS

FLAT TEMPERED WIRE PUSH BROOMS

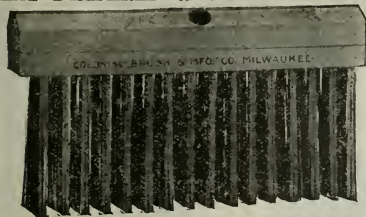


Fig. 120

Made of Flat Tempered Steel Wire

No.	Size of Blocks inches	Rows	Length of Wire inches	List per gross
120	12x2 $\frac{3}{4}$	4	5	\$120.00
121	14x2 $\frac{3}{4}$	4	5	132.00
122	16x2 $\frac{3}{4}$	4	5	144.00

GENUINE AFRICAN BASS



Fig. 202

List per Gross

No. 202.	Block 16x3 $\frac{1}{2}$ inches, 5 rows, length of stock 7 inches.	\$170.00
No. 207.	Block 16x4 inches, 6 rows, length of stock 7 inches.	190.00

STREET BROOMS

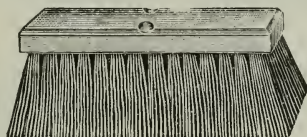


Fig. 1001

12 INCH CIVIC BASS

High grade bass, full stock. Face size, 13x4 inches. 4 rows wide, 12 rows long. 5 $\frac{1}{2}$ inch trim out of block.
 One dozen in box, without handles. per doz. \$5.00

14 INCH CIVIC BASS

High grade bass, full stock. Face size, 15x4 inches. 4 rows wide, 16 rows long. 5 $\frac{1}{2}$ inch trim out of block.
 One dozen in box, without handles. per doz. \$6.00

16 INCH CIVIC BASS

High grade bass, full stock. Face size, 17x4 inches. 4 rows wide, 16 rows long. 5 $\frac{1}{2}$ inch trim out of block.
 One dozen in box, without handles. per doz. \$6.75

HEAVY ROUND RATTAN



Fig. 271

List per Gross

No. 271.	Block 14x3 inches, 4 rows, length of stock 6 inches.	\$105.00
No. 272.	Block 16x3 inches, 4 rows, length of stock 6 inches.	120.00
No. 276.	Block 14x3 $\frac{1}{2}$ inches, 5 rows, length of stock 6 inches.	120.00
No. 277.	Block 16x3 $\frac{1}{2}$ inches, 5 rows, length of stock 6 inches.	135.00
No. 282.	Block 16x4 inches, 6 rows, length of stock 6 inches.	150.00

MUNICIPAL BASS

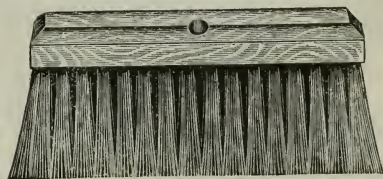


Fig. 1201

16 INCH MUNICIPAL BASS

High grade bass, full stock. Face size, 17x5 $\frac{1}{2}$ inches. 6 rows wide, 16 rows long. 6 $\frac{1}{2}$ inch trim out of block.

One dozen in a box, without handles. . per doz. \$8.00

FOR HANDLES TO FIT ABOVE BROOMS, SEE INDEX

BROOMS



Fig. 933A



Fig. 933C



Fig. 933B



Fig. 933D

Fig. 933D
Handle

Fig. 933A. INLAND LAKE PLAIN WAREHOUSE BROOMS

All corn; three sewed; steel banded. A first class broom in every way.	price per doz.	\$7.20
32 lb.	price per doz.	8.50
36 lb.	price per doz.	8.50

Fig. A933A. "INLAND LAKE" CABIN OR HOUSE BROOM.
(Not Illustrated)

Much lighter in weight, but similar in appearance to our "Inland Lake" all corn warehouse broom.
Price per doz. \$7.20

Fig. 933B. INLAND LAKE CLAMPED CORN BROOM.

An all-corn warehouse broom. Undoubtedly the best factory and warehouse broom on the market. Impossible for the handle to come loose or the corn break in the shoulder, because the clamp is put on under 10,000 lbs. pressure.

32 lb.	price per doz.	\$7.20
36 lb.	price per doz.	8.50

Fig. A933B. THE ZIMMERMAN STEEL CLAMPED MIXED BROOM.
(Not Illustrated)

Same construction as our Inland Lake brand. Instead of corn it is filled with bamboo split or rattan, as desired. A very sturdy article.
price per doz. \$7.20
price per doz. 8.50

Fig. 933C. "SPRING MAID" BROOMS.

For either house, store or factory use. Made of bass fibre, with a detachable handle, which permits replacing of brooms when worn out; this is fitted with a piece of flexible steel which gives great elasticity. Width, 12 inches.
List price complete. per doz. \$12.00
List price, extra brooms. each .75

Fig. 933D. "INLAND LAKE" R. R. SWITCH BROOM.

These brooms are used by all railroads for removing snow from switch joints. Made of cane or rattan. End of handle fitted with chisel point for cleaning out frogs.
Price, with Chisel Point. per doz. \$8.00
Price, without Chisel Point. per doz. 7.00



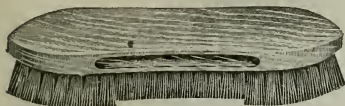
Fig. 933E

O-CEDAR MOP

For dusting, cleaning and polishing hardwood floors, standing woodwork, doors and large furniture. Also excellent for oil cloth and linoleum covered floors. Is treated with O-Cedar Polish and can be cleaned, washed and renewed. Has the handy handle hinge and long handle, making it easy to clean those hard-to-get-at places, such as the tops of doors, mouldings, under heavy furniture, etc. This mop is substantially made and will stand hard and constant use. Each mop comes in lithographed tin with full directions for cleaning and renewing.

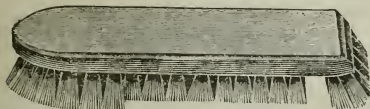
List price, large size.	\$1.25
Small size	.75

SCRUB AND DECK BRUSHES—SQUEEGEES

**CUCKOO SCRUB BRUSH**

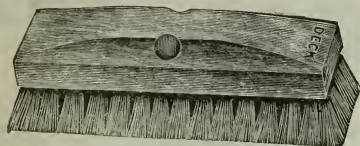
White tampico stock, winged scrub brush; face 11x2 3/4 inches; 7 rows wide, 28 rows long. One dozen in carton.

Price per doz.\$1.75

**AAAA SCRUB BRUSH**

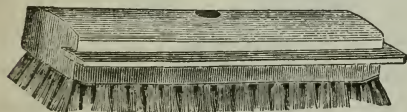
Rice root stock; hub shape, flaring ends; face 12x3 1/4 inches; 5 rows wide, 16 rows long. One dozen in carton.

Price per doz.\$2.00

**SCRUB OR DECK No. 5**

High grade palmyra stock; square block; 2 holes for handle; face 10x2 1/4 inches; length of stock 1 1/2 inches out of block; 6 rows wide, 15 rows long. One dozen in carton.

Price per doz. without handles.....\$5.50

**COMBINATION SCRUB AND SQUEEGEE
With Long Handles**

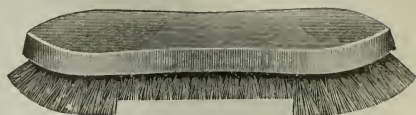
Inland Lake quality; 11 1/2 inches long; fitted with high grade rubber strip 1 inch wide and 12 inches long; furnished with long handles.

List price per doz.\$9.00

**FLOOR SQUEEGEES OR SCRAPERS**

12 inch.....	Per doz. \$2.25
14 inch.....	" 2.50
16 inch.....	" 3.25
18 inch.....	" 3.75

Handles Extra—See Index

**GOOD LUCK No. 1 SCRUB BRUSH**

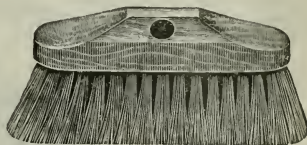
White tampico stock; winged scrub brush; face 11x2 3/4 inches; 5 rows wide, 20 rows long. Six dozen in carton.

Price per doz.\$1.00

**No. 10 PALMETTO SCRUB BRUSH**

Pure palmetto stock; square block; very full; face 12x2 3/4 inches; 5 rows wide, 17 rows long. One dozen in carton.

Price per doz.\$1.25

**CAR OR WINDOW BRUSH**

Full stock; black or gray horse hair; face size 10 1/2 x 3 1/2 inches; 6 rows wide, 20 rows long. One dozen in carton.

Price per doz. without handles.....\$4.75

**WINDOW SQUEEGEES**

12 inch.....	Per doz. \$3.00
14 inch.....	" 3.50
16 inch.....	" 4.00
18 inch.....	" 4.50

Handles Extra

FLOOR, COUNTER AND PITCH BRUSHES

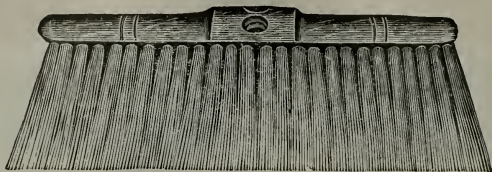


Fig. S72A

14-inch Floor Sweep.

Full stock—Best Grey Tampico or high grade Palmetto. Face Size 16x4½ inch.

Price—Grey Tampico\$6.00 per dozen with handles
 Price—Palmetto 5.75 per dozen with handles

Packed 1 dozen in carton.

16-inch Floor Sweep.

Full stock—Best Grey Tampico or high grade Palmetto. Face Size 18x4½ inch.

Price—Grey Tampico\$7.00 per dozen with handles
 Price—Palmetto 6.75 per dozen with handles

Packed 1 dozen in carton.

18-inch Floor Sweep.

Full stock—Best Grey Tampico or high grade Palmetto. Face Size 20x4¾ inches.

Price—Grey Tampico\$8.00 per dozen with handles
 Price—Palmetto 7.50 per dozen with handles

Packed 1 doz. in carton.

Counter Dusters



Fig. S72B

Extra Quality Pure Bristle, Grey Center, White Casing, Cement Set, Red Polished Blocks.

8 inch, length of stock 2½ inches.....\$12.80

9 inch, length of stock 2¾ inches..... 14.40

10 inch, length of stock 3¼ inches..... 19.20

11 inch, length of stock 3½ inches..... 29.60

Packed ½ dozen in carton.

Bench Brush



Fig. S72C

Grey Tampico stock; flaring end Bench Brush, face size 10½x1½ inches, 3 rows wide—21 rows long. Price one dozen in carton..Per doz. \$1.40

Floor Brushes



Fig. S72D

Red Polished Blocks, Two Threaded Handle Holes, Polished Handles, Grey Russian Bristle, 3 ¾ inches long, Cement Set.

14 inch. List per dozen.....\$50.10

16 inch. List per dozen..... 57.60

Super Knotted Roofing Brushes

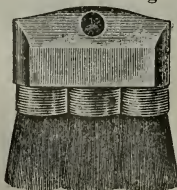


Fig. 610

Our knotted roofing brush, made like oval paint brushes, fastened securely to a heavy block, for use in roofing paint, with long handles, all gray Russia bristle.

2 knot, 4Per doz. \$34.00

3 knot, 4¼ " 50.00

4 knot, 4¾ " 65.00

18 inch. List per dozen.....\$67.20

20 inch. List per dozen..... 80.00

Ship Seam Brushes

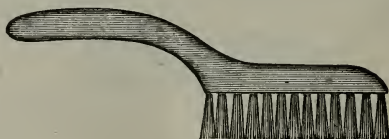


Fig. S72E

No. 1. Per dozen\$3.40

No. 2. Extra large, per dozen..... 4.50

BRUSHES AND BROOMS

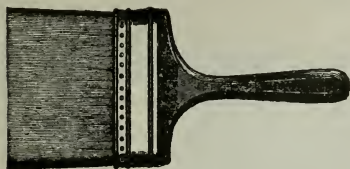


Fig. 873A

KALSOMINE BRUSHES—"CANTON"

Pure Chinese Bristles—Long Stock

	Per doz.
Width 6 inches, length $4\frac{3}{4}$ inches.....	\$20.00
Width 7 inches, length $4\frac{7}{8}$ inches.....	27.50
Width 8 inches, length 5 inches.....	32.50

KALSOMINE BRUSHES—"RUSSIA"

Per doz.

Width 6 inches, length $3\frac{1}{4}$ inches.....	\$11.00
Width 7 inches, length $3\frac{1}{2}$ inches.....	14.00
Width 8 inches, length $3\frac{3}{4}$ inches.....	16.50



Fig. 873B

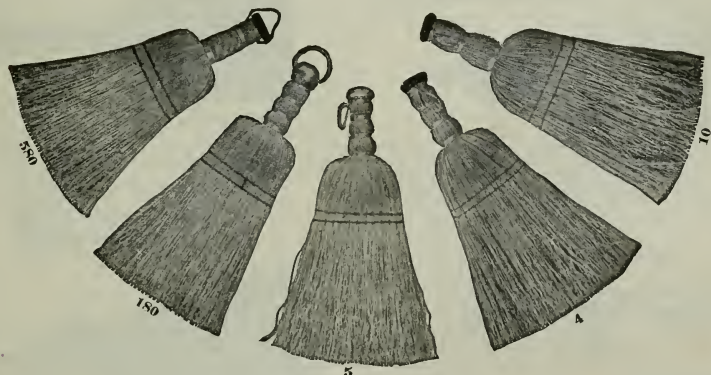
Standard Whitewash Heads

WHITEWASH HEADS—"FAVORITE"

All White Russia Bristles—Brass Bound

	Per doz.
No. 1. Width 6 inches, length $2\frac{3}{4}$ inches	\$4.80
No. 3. Width 7 inches, length $2\frac{5}{8}$ inches	6.25
No. 5. Width 8 inches, length 3 inches	8.25
No. 7. Width $8\frac{1}{2}$ inches, length $3\frac{1}{4}$ inches	11.00
No. 10. Width 8 inches, length $3\frac{1}{2}$ inches	15.00
No. 20. Width 8 inches, length 4 inches	21.50
No. 30. Width $8\frac{1}{2}$ inches, length $4\frac{1}{2}$ inches	28.00
No. 40. Width 9 inches, length $4\frac{3}{4}$ inches	37.50
No. 50. Width 9 inches, length 5 inches	44.00
No. 60. Width 9 inches, length $5\frac{1}{4}$ inches	51.00

For Handles, See index.



WHISK BROOMS

Price List

No.	Quality	Sew	Color	Finish	Length Cap	Price per gross
10	C	2	Green	Hurl-Plush Cap	$7\frac{1}{2}$	\$10.00
4	C	2	Red	Hurl-Plush Cap	$7\frac{1}{2}$	13.00
5	B	2	Orange	Hurl-Tin Cap	$7\frac{1}{2}$	16.00
180	B	2	Orange	Hurl-Nickel Cap	$7\frac{1}{2}$	18.00
580	A	2	Orange	Hurl-Braid Cap	$7\frac{1}{2}$	23.00

BRUSHES SET IN RUBBER—INLAND LAKE



The "holding parts" of Inland Lake Brushes are all metal, and the bristles, ferrule and handle are forced together under high pressure, making it impossible for the brushes to "shed bristles" or come apart, no matter how long the dealer may carry them in stock. They are absolutely guaranteed to hold and to work satisfactorily in paint, varnish, shellac, hot glue, or any other mixture or preparation that will not injure or destroy the bristles. They are the neatest Brush on the market, and the easiest for the mechanic to keep clean. The strongest metal bound Brush in the world. They will wear up closer without becoming stiff or stubby. They will not "finger" or "swallow tail."

INLAND LAKE (RUBISTO) FLAT VARNISH BRUSH

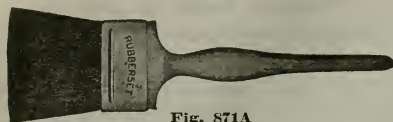


Fig. S71A

Best selected Chinese bristles, chisel pointed, extra long and heavy. Nickel bound, oval handle.

Width, inches	Length of Hair inches	Price each
1	2	\$0.40
1½	2½	.60
2	2¾	.90
2½	3	1.10
3	3¼	1.50

INLAND LAKE (RUBISTO) WALL BRUSH

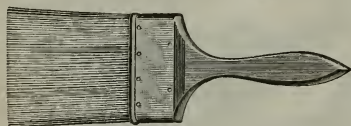


Fig. S71B

Brass bound; varnished handle. Best selected white Russian bristles. Extra long and flexible.

Width, inches	Length of Hair inches	Price each
2	...	\$0.70
2½	...	.80
3	3¾	1.10
3½	4	1.40
4	4¼	1.80
4½	4½	2.40
5	4¾	3.00

INLAND LAKE (RUBISTO) OVAL VARNISH BRUSH



Fig. 1-0

Selected Chinese bristles, chisel pointed, nickel ferrule. An excellent painters' brush.

No.	Length of Hair inches	Price each
1-0	2½	\$0.90
3-0	2¾	1.10
5-0	3¾	1.30
7-0	3¾	1.80
9-0	4¼	2.40

INLAND LAKE SPECIAL SUPER WALL BRUSH

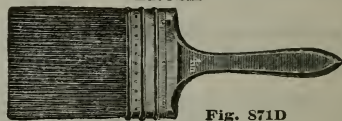


Fig. S71D

Extra long selected black Chinese bristles, nickel ferrules, red polished Beaver Tail handles.

Width, inches	Length, inches	Price each
3	4½	\$3.00
3½	4¾	4.00
4	4	4.50

INLAND LAKE REGULAR WALL BRUSH

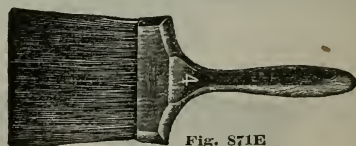


Fig. S71E

Extra long selected black Chinese bristles, very full and heavy, nickel ferrules, red polished handles.

Width, inches	Length, inches	Price each
3	3½	\$1.40
3½	3¾	2.00
4	4	2.50

PAINTERS' DUSTER

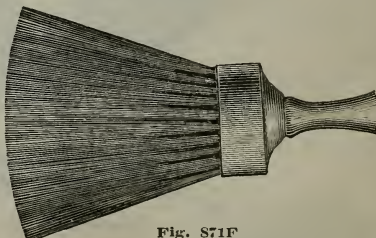


Fig. S71F

All our dusters are set with pitch, extra block and warranted to hold.

No.	Description	Length of Hair inches	Price each
3	Gray mixed.....	3¾	\$0.70
14	Bristles black outside	4	1.10
25	White outside, gray, bristles middle.....	4¾	2.00

PAINT, GLUE, AND BRONZING BRUSHES

"NEUTRAL" WALL BRUSH



Fig. 012

An excellent brush, carried in stock for those not requiring a brush of our "Inland Lake" or "Rubisto" grade. Heavy metal bound; varnished handle. High grade bristles.

Width, 2½ inches; length, of bristles, 3½ inches.....	each	\$0.30
Width, 3 inches; length of bristles, 3¾ inches.....	"	.40
Width, 3½ inches; length of bristles, 4 inches.....	"	.50
Width, 4 inches; length of bristles, 4¼ inches.....	"	.60

"NEUTRAL" OVAL VARNISH BRUSH



Fig. 013

Good grade Chinese bristles, chisel pointed, nickel ferrule. An unusual value for the price asked.

No. 1-0. Length of hair, 2¾ inches.....	each	\$0.35
No. 3-0. Length of hair, 2¾ inches.....	"	.40
No. 5-0. Length of hair, 3 inches.....	"	.55
No. 7-0. Length of hair, 3½ inches.....	"	.75
No. 9-0. Length of hair, 4¼ inches.....	"	1.00

RADIATOR BRONZING BRUSHES



Fig. 014

Same general construction as "Neutral" brushes, described above. Metal bound. Good quality of bristles.

Width, 1½ inches.....	each	\$0.35
Width, 2 inches.....	"	.45
Width, 2½ inches.....	"	.55

BRISTLE MARKING BRUSHES

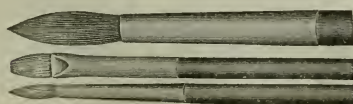


Fig. 015

French bristles, round cedar handles, tin ferrules.

No. 1.....per doz.	\$0.40	No. 4.....per doz.	\$0.50
No. 2....."	.40	No. 5....."	.60
No. 3....."	.45	No. 6....."	.75

Assorted 1 to 6.....per doz. \$0.45

"NEUTRAL" SASH TOOL



Fig. 016

Made of high grade elastic bristles. Oval, chisel pointed with well finished handle.

No. 2. Length of bristles, 1½ inches.....	each	\$0.12
No. 4. Length of bristles, 1¾ inches.....	"	.20
No. 6. Length of bristles, 2 inches.....	"	.28
No. 8. Length of bristles, 2½ inches.....	"	.30

EXTRA GLUE BRUSHES



Fig. 017

Made of Russia bristles. Has iron handle to prevent shrinkage, and metal ferrule. Warranted to stand hot glue.

No. 3-0. 5/8 inch diameter.....	per doz.	\$3.00
No. 2-0. 5/8 inch diameter.....	"	3.50
No. 1-0. 7/8 inch diameter.....	"	4.00
No. 1. 1 inch diameter.....	"	4.50
No. 2. 1¼ inch diameter.....	"	5.50
No. 3. 1½ inch diameter.....	"	6.75

STENCIL BRUSHES



Fig. 018

All white bristle, tin band on small sizes, zinc on larger sizes, yellow finished handles. A good, full ordinary brush.

No. 1. Dia., 1/4 in.; length, 1 in.....	per doz.	\$ 2.40
No. 2. Dia., 5/8 in.; length, 1¼ in.....	"	2.60
No. 3. Dia., 3/4 in.; length, 1½ in.....	"	2.90
No. 4. Dia., 7/8 in.; length, 1¾ in.....	"	3.40
No. 6. Dia., 1 in.; length, 1½ in.....	"	5.00
No. 8. Dia., 1¼ in.; length, 1¾ in.....	"	6.10
No. 10. Dia., 1½ in.; length, 1¾ in.....	"	8.00
No. 12. Dia., 1¾ in.; length, 1¾ in.....	"	10.40

We also furnish these brushes in a better grade, for those who want something better. The solid nickel ferrules eliminate all chance of stencil ink working through and soiling the hands. White bristles, solid nickel ferrules.

No. 40. Dia., 1 in.; length, 1¼ in.....	per doz.	\$10.40
No. 80. Dia., 1¼ in.; length, 1½ in.....	"	15.00
No. 200. Dia., 1½ in.; length, 1¾ in.....	"	17.20
No. 400. Dia., 2 in.; length, 2 in.....	"	27.00
No. 600. Dia., 2½ in.; length, 2¼ in.....	"	54.00

MOP WRINGERS AND SUPPLIES

JAMES ORR BOILER COMPOUND

A concentrated purifier having a vegetable base, strengthened by the addition of certain solvents famous for their power to precipitate all scale forming substance.

This compound is not an expense because it saves ten times its cost every time it is put into a boiler.

Liquid in barrels and half barrels	per gal.	\$0.90
Liquid in 5 and 10 gal. jacket cans	"	1.20
Powder in 50 and 100 lb. boxes	per lb.	.10
Paste in 50 and 100 lb. boxes	"	.10
Bricks	"	.11

POLISHING BOXES

Tin and Brass

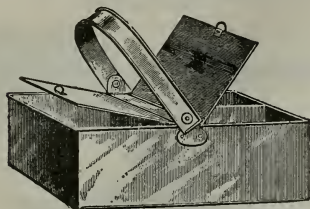


Fig. BP4

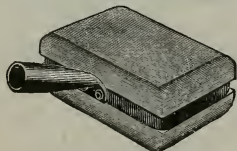
Two Sectioned Box without Cover

Stock No.	Material	List Price each
BP1	Tin	\$3.00
BP2	Brass	4.00

Three Sectioned Box with Cover

Stock No.	Material	List Price each
BP3	Tin	\$5.00
BP4	Brass	6.00

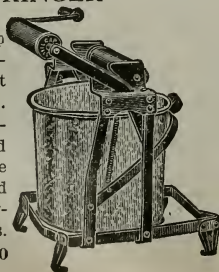
HOLY STONES



Stock No.	Dimensions, inches	List Price
BP5	9x6x4	\$6.00
BP6	8x6x4	5.40
BP7	7x5x4	4.80

MOP WRINGER

A compact, strong mop wringer. Feet are concave and will not scratch or mar floors. Rolls are made of thoroughly seasoned hard maple. Frame is made of Bessemer Rolled Steel. A sanitary wringer for sanitary purposes. Price each\$3.50



PRESERVO

Colors, Brown and White

This waterproofing preparation has proven very satisfactory for covering canvas material of all kinds. It makes the material to which it is applied very soft and pliable and will keep it from mildewing in any climate. It does not freeze in cold weather and has been found very satisfactory when used in the Arctic regions.

Put up in	Bbls.	5 gals.	1 gal.	1/4 gal.
Price	\$1.00	\$1.20	\$1.10	\$0.40

USES OF PRESERVO

Awnings, Bags, Baskets, Beltings, Blankets, Buildings, Cases

Land Use—Brewery mats, shipping and storing covers for agricultural machinery, etc., haystacks, contractors' uses, wagons, horses, saddles, packs, road rollers, guns, army stores, protection of fruits from frost, bales of all kinds, umbrellas, milk cans, ice cream pails, outside steam-pipe covers, ash-can covers, fertilizer bags, curtains, cushions, flags, furniture, harness, hose, mudguards, nets, packings, shades, sails, signs, tents, tops, etc.

Marine Use—Motor boat spray-hoods, laying-up covers, engine covers, dinghy covers, etc.

Larger Vessels—Hatches, binnacles, telegraphs, life boats, working boats, sounding machines, lead-lines, sails covers), decks, deckloads, skylights, rapid-fire and other naval guns, windlasses, stores, water-wings.

PERFECTITE

Colors White and Brown

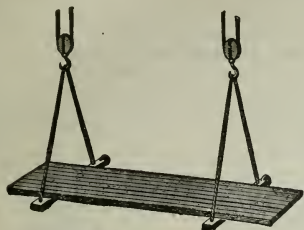
A waterproofing compound in semi-paste form. Can be thinned with gasoline, linseed oil, or any other drying oil that may be desirable to use.

On closely woven fabrics one gallon of gasoline to a pound or one and one-half pounds will make the fabric waterproof, but on open goods two pounds to a gallon of liquid should be used. One coat is usually sufficient if applied uniformly with a brush. It does not injure the fabric or material to which it is applied. It should be applied on material that is perfectly dry in order to penetrate. It is not intended to remain on the surface and give a glossy finish but to penetrate and be absorbed by the fabric, making it waterproof through and through. In cans of 1 lb., 2 lb., 5 lb., 25 lb., 100 lb.

Price, per lb. \$0.50



LADDERS AND STAGES



STAGES

Sides and slats made of clear Norway pine with hickory rungs, put together with heavy screws and made strong and safe in every respect.

Lengths 14 to 28 feet.....per foot \$0.36
Cross bars with Lignum Vitae rollers.....per pair 2.00

PAINTERS' FALLS

We are among the largest manufacturers of Painters' Falls in the country. Send us your specifications, stating diameter of rope and length of fall. We will quote interesting prices.

All Falls are fitted with two single and two double blocks, spliced in, ready for use.

Steel hooksper pair \$4.00
Upper slings, 1 in. rope..... 1.00
Stirrups, 1 in. rope..... 2.00
Guy linesper lb.

PAINTERS' TRESTLES



Cut represents one trestle or half a pair.

Lengths 4, 5, 6, 7, 8, 10, 12, 14, 16, 18, 20 and 22 feet.

1. Sizes of rails proportionately increased to length of trestles.
2. Clear pine sides.
3. Holes bored at correct angle to eliminate binding of rungs where let into sides, thus avoiding undue stress.
4. Rungs of best hickory turned with oval center $1\frac{1}{2}$ inch to 1 inch at end and let into side with tenon 1 inch long and secured with nails driven edgewise into stile through rung.

5 to 10 feet.....per foot \$0.28
12 to 16 feet..... " .30
18 to 20 feet..... " .32

"ALCO" STEP LADDERS

The "Alco" is finished in natural wood. Extra wide steps and top. A steel rod re-inforces each step. Top secured with malleable brackets, riveted to the stiles. Metal parts galvanized or aluminum bronzed.....per foot \$0.32

"IXL." A good substantial step ladder.....per foot .28
"Household." Good enough for ordinary purposes.....per foot .20

Standard lengths are 4 to 12 feet. Step ladders with shelf, \$0.02 per foot additional.



DROP CLOTHS

Size Feet	Drilling	7 oz. Duck
9x12.....each	.....	.....
12x15.....	.....	.....
14x16.....	.....	.....

Any Size to Order
Prices on Application

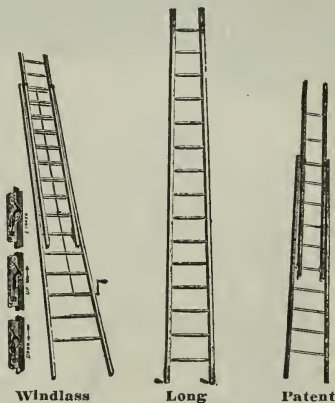
G. B. C. & Co.'s
IMPROVED ROPE LADDER AND
FIRE ESCAPE

Wire Rope

$\frac{3}{4}$ inch diameter galvanized wire rope, with
 $\frac{1}{2}$ inch diameter steel rungs.....per foot \$0.35

Manila Rope

$\frac{3}{4}$ inch diameter manila rope, with $\frac{1}{2}$ inch
diameter hickory rungs.....per foot \$0.25



WINDLASS EXTENSION LADDERS

Weight $3\frac{1}{4}$ lbs. per foot.

24 to 50 feet long.....per foot \$0.26

LONG LADDERS

Weight $2\frac{1}{2}$ lbs. per foot.

8 to 20 feet long.....per foot \$0.14

PATENT EXTENSION LADDERS

Weight 3 lbs. per foot

Made of clear Norway pine, hickory rungs well put together with long heavy screws. This ladder has a separate iron on each side of it, so constructed that it cannot bend or get out of order. These irons have friction rollers which make the ladder extend easier.

20 to 40 feet long in two sections....per foot \$0.20

Over 40 feet long in three sections.... " .20

Additional 1.50

WIRE ROPE SAFETY STRAPS AND BAILS

Illustrated on this page are the new SAFETY STRAPS AND BAILS for painters' and tuck pointers' stages, now required by the Factory Inspection Department of the State of Illinois.

This type of safety strap is the only one now permitted, and your job will be stopped if you use stages which are not equipped with the authorized wire rope straps and bails.

By referring to the engravings it will be noted that the object of the safety strap and bail is to prevent the fall of the scaffold should the 2x4 cross pieces on which it is carried break.

Should this wooden support break, the wire rope safety strap will catch and hold the platform, as the loops of the bail are held in place at each end by bolts, thus very greatly reducing the liability of accident.

We are manufacturers of these bails and straps and can furnish them promptly in any size wanted. They are made in strict conformity with the specifications laid down by the State Factory Inspection Department of the State of Illinois.

Price each\$6.00 Price per pair\$10.00

Prices do not include stages.

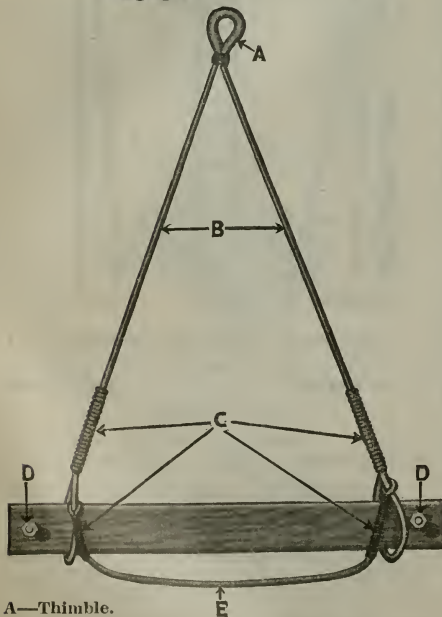


TUCK POINTERS' SCAFFOLDS

A one-piece stirrup and crossbar, forged from $\frac{5}{8}$ -inch wrought iron. Used by tuck pointers, as required by Illinois State Factory Inspection.

List price per pair, plain.....\$ 9.00

List price per pair, with rail guard.....15.00



A—Thimble.

B— $\frac{5}{8}$ inch galvanized steel running rope.

C—Splice.

D— $\frac{3}{4}$ inch bolt, 1 inch sleeve washer, 3 inches from ends of 2x4 cross piece.

E— $\frac{5}{8}$ inch safety strap (cable).

SAFETY NETS

We also manufacture safety rope nets as provided for in Section 5 of the "Structural Safety Law" of the State of Illinois. These nets are stretched below trusses to prevent injuries to men on account of slipping or being pushed.

The State Factory Inspection report says in part: "This department recommends the adoption of these nets, not only to contractors, but also to the various State departments and City commissions, as a practical device. Contractors in Illinois are pleased with them and the workmen claim they inspire a feeling of security, which enables them to go about their work with greater freedom."

These nets are made of the best $\frac{3}{8}$ inch Manila rope with $\frac{3}{4}$ inch rope border. Meshes are 6 inches square. Made in strict accordance with the specifications of the Factory Inspection Department, State of Illinois. Prices on request.

BINKS WHITEWASHING, PAINTING AND SPRAYING MACHINES

For Spraying Whitewash, Cold Water Paints, Insecticides, Disinfectants, Etc.

STYLE "A"

Style "A" is one of the largest Hand Power Spraying Machines manufactured and is especially adapted for those having considerable work to perform such as warehouses, factory establishments, etc.

EQUIPMENT

Spray Pipe complete with $\frac{1}{4}$ inch Cock and Spray Nozzle, 1 extra Spray Tip, 200 lb. Pressure Gauge, special galvanized Sieve, Follower Wrench, $\frac{3}{4}$ inch Discharge Cock, one length 1 inch Suction Hose and 20 feet $\frac{1}{2}$ inch Discharge Hose. Styles A and B have the above equipment and C and D the same with exception of hose, which is 10 feet. Style B, C and D are constructed along the same practical lines as Style A, the difference being in capacity only, as follows:

Wt., lbs.	Style	Capacity	Each
100	A	Equal to the work of 30 men	\$44.00
85	B	Equal to the work of 20 men	38.00
80	C	Equal to the work of 16 men	31.00
75	D	Equal to the work of 10 men	25.00



Style "A"

STYLE "J"

Legs can be taken off and put over barrel.

This style is one of our most popular sellers. The machine is well designed, light consistent with strength and is adapted for all spraying purposes. It is constructed of the same high grade materials throughout as our other styles having all brass working parts, Brass Ball Valves and Removable Seats. One man can operate this machine alone and from 80 to 90 lbs. pressure maintained. Capacity equal to work of six men with brushes.

EQUIPMENT

Spray Pipe complete with $\frac{1}{4}$ inch Cock and Spray Nozzle, Follower Wrench and 10 feet of $\frac{3}{4}$ inch Discharge Hose. Weight 40 lbs.

Price each. \$12.60



Style "J"

STYLE "F"

Style "F" portable, self contained. Tank made of extra heavy galvanized, 20 gallons capacity, reinforced with steel bands at top and bottom. Pump furnished has seamless brass cylinder and all brass working parts. A mechanical agitator operates at each stroke of the pump. The most efficient portable outfit manufactured, designed for transporting over rough surfaces and through narrow passageways. Truck is equipped with heavy wide faced iron wheels.



Style "F"

EQUIPMENT

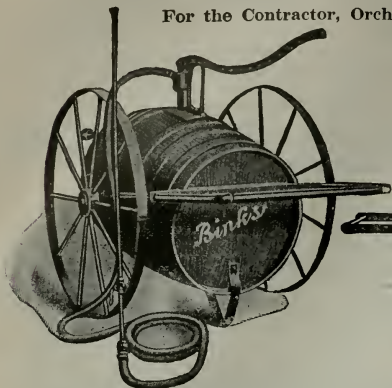
Spray Pipe complete with $\frac{1}{4}$ inch Cock and Spray Nozzle, one extra Spray Tip, 200 lb. Pressure Gauge, special galvanized Sieve, Follower Wrench and 10 feet $\frac{1}{2}$ inch Star Special Discharge Hose.

Weight 110 lbs. Price each. \$32.00

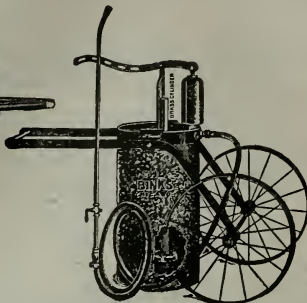
FOR POWER SPRAYING MACHINES, BRUSHES, PAINTS, CANS, ETC., SEE INDEX

BINKS SPRAYING MACHINES

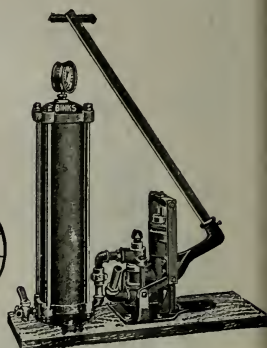
For the Contractor, Orchardist, Gardener, Farmers and Growers



Style No. 15



Style No. 21



Style No. 28

STYLE No. 15

Style No. 15. Binks' Improved Barrel Sprayer. Has all Brass Cylinder, Brass Ball Valves, 32 inch Wheels. Dasher Agitator operates at every Stroke of the Pump. Capacity of barrel 30 gallons. Machine furnished complete as illustrated with 10 feet $\frac{1}{2}$ inch Discharge Hose, Stop Cock, Spray Pipe and Nozzle. Net weight 90 lbs. Gross weight 105 lbs. Price.....\$25.00

STYLE No. 21

Style No. 21 General Purpose Sprayer. Our biggest seller. Many thousands of these machines are giving excellent service about the home, truck farm, orchards, etc. Machine is portable, well balanced, light, consistent with strength and has many improvements over other machines of a similar design. Has large Iron Air Chamber which insures a constant steady pressure, and will operate against 125 lbs. pressure. Mechanical Agitator operates at every stroke of the pump and at the same time washes all sediment from suction strainer, thus preventing any possible chance of clogging.

EQUIPMENT

Furnished complete as illustrated and described with 10 feet Star $\frac{1}{2}$ inch Special Discharge Hose and Couplings, Spray Pipe, complete with $\frac{1}{4}$ inch Cock and Spray Nozzle. Price....\$18.75

STYLE No. 28

Style No. 28. Where there are a large number of trees to be sprayed and a high pressure is required, this is the best style to use. The double Fulcrum (found on this Pump only) eliminates the hard labor of pumping. It is not tiresome to maintain a pressure of 150 lbs. Cylinder 2 $\frac{1}{2}$ inch diameter, 3 $\frac{1}{2}$ inch stroke. Piston Case Bronze, outside packed. Valves and Seats. Bronze Balls. Seats cast bronze, replaceable, accessible by removing two bolts. Air Chamber, Steel Boiler Tube 6 inch diameter, 24 inches high. This size allows the operator to pump and rest alternately.

EQUIPMENT AND PRICE

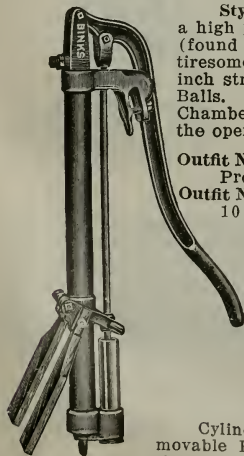
- Outfit No. 1**—Pump complete as illustrated, 8 feet 1 inch Suction Hose and Pressure Gauge, net weight 125 lbs.\$40.00
Outfit No. 2—Pump complete, 8 feet 1 inch Suction Hose, Pressure Gauge, 10 feet $\frac{1}{2}$ inch Discharge Hose and Couplings, Iron Spray Pipe, $\frac{3}{4}$ inch Stop Cock and Spray Nozzle. 44.50
Outfit No. 3—Same as No. 2 but with 25 feet $\frac{1}{2}$ inch Discharge Hose and Couplings. 47.50
Outfit No. 4—Pump complete, 8 feet Suction Hose, Pressure Gauge, two 25 foot lengths $\frac{1}{2}$ inch Discharge Hose and Couplings, 2 Iron Spray Pipes, each equipped with $\frac{1}{4}$ inch Cock and Nozzle. 54.50

STYLE No. 17

Style No. 17. Exceptionally popular low priced Barrel Sprayer, unexcelled for orchard use. Can be used in connection with any barrel. It is neat, compact, adjustable, durable and efficient.

EQUIPMENT

Cylinder 1 $\frac{3}{4}$ inch Seamless Brass Tubing, Brass Ball Valves seated on removable Brass Seats. Air Chamber 2x28 inches. Agitator, twin paddle type, simple and very effective. Handle, Malleable Iron. Clamping device requires no drilling to attach to barrel, simply adjust by turning set screws. Net weight 35 lbs., gross weight 45 lbs. Accessories, Hose, Nozzles, etc., extra. Price.....\$10.00



Style No. 17

WHITE LEAD, PUTTY AND PAINTERS' SUPPLIES

WHITE
LEAD

We carry all the popular brands. One make is substantially the same as another, as every chemist knows. **Strictly pure with us is strictly pure.**
In 500 lb., 300 lb., 100 lb., 50 lb., 25 lb. and 12½ lb. kegs. 5 lb., 3 lb., 2 lb. and 1 lb. cans.
Lowest market price on application.

CHAMOIS SKINS

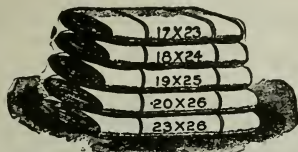


Fig. 405A

Domestic Skins Suitable for Straining Gasoline,
Etc.

Size, inches	Price, each	Size, inches	Price, each
12x16	\$0.44	20x26	\$1.30
16x21	.80	23x28	1.90

Imported French Skins, the Highest Grade on the
Market. For Washing Automobiles, Yachts
and Hydroplanes

Size, inches	Price, each	Size, inches	Price, each
19x21	\$1.40	27x30	\$2.30
23x25	1.70	.....	.....

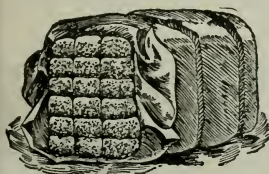


Fig. 405B

Suitable for yachts, automobiles and all high
class work. 3 to 4 equal 1 lb.
Per ounce\$0.45

Best Quality Cuba Sheeps Wool Cuts

Suitable for painters' use and ordinary work.
4 to 6 equal 1 lb.
Per Pound\$2.75

Florida Yellow Sponges

For coarse and rough use. 3 to 4 equal 1 lb.
Per pound\$2.75

SPONGES

Best Quality
Rock Island Full
Forms



Fig. 383A

PUTTY

Barrels, about 800 lbs., per 100
lbs.per cwt. \$5.50
100 lb. Tin Jacket Kits.per lb. 5.50
25 lb. Tin Jacket Kits.per lb. .08
Bladdersper lb. .09
Spreads smoothly and freely under
the knife; dries with a hard surface
and never shrinks or cracks.

INLAND LAKE PUTTY AND
SCRAPING KNIVES

Fig. 383B

- Size 1. Putty Knife, narrow blade. A cheap
knifeeach \$0.20
Size 2. Putty Knife, elastic blade 3½x1¼
inches, metal ferrule. A service-
able knifeeach .50
Size 3. Putty Knife, elastic, rosewood handle,
blade 3¼x1¼ inches. Best grade.
Each70

SCRAPING KNIVES

Furnished with 2½ inches or 3 inches blade, stiff
or elastic. A medium priced serviceable knife.
Scraping Knife of best quality. With cocobolo
handle, with 2½ or 3 inch blade. Either stiff or
elastic. A first quality knife.

Price, each\$0.70

GLAZIERS' POINTS

In ¼ lb. Papers

One dozen papers in package.

No. 1. Largeper doz. papers \$0.80

No. 2. Mediumper doz. papers .80

Fig. 383C No. 3. Smallper doz. papers .80

GLASS CUTTERS

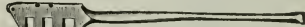


Fig. 383D

No. 7. Iron handle, painted red, except polished
cutter head; single M. F. "Perfect-Cutting" wheel;
packed each cutter in an individual pasteboard box
and one dozen boxes in a carton.

Price each\$0.10

No. 300. Hardwood handle, stained and enam-
eled; nicked head with six removable M. F. "Per-
fect-Cutting" wheels; each wheel numbered; packed
one each in a pasteboard box.

Price, each\$0.30

STEEL WOOL



ONE LB. NET

Fig. 385

Steel Wool is a mass of fine fibre of steel re-
sembling curled hair, which while sharp, does not
scratch, but will cut as smoothly as the finest
abrasive material heretofore used. It is the best
article for rubbing off varnish, shellac, etc., for
various uses where sandpaper, pumice stone and
other rubbing materials are used, and doing the
work quicker, hence saving time, labor and cost
and making it easier for the workman, as he can
do the work better and quicker.

Being soft and pliable, Steel Wool adapts itself
to the shape of carvings, mouldings, etc., going into
places where sandpaper, etc., do not get in.

Steel wool does not clog up or gum up and can
be used to the last particle.

No. 0 is about equal to 00 sandpaper.

Per lb.\$0.65

No. 1 is about equal to 0 sandpaper.

Per lb.\$0.50

No. 2 is about equal to ½ or 1 sandpaper.

Per lb.\$0.47

No. 3 is about equal to 1½ or 2 sandpaper.

Per lb.\$0.45

One pound in a package.

WATER AND WEATHERPROOF COATINGS



INLAND LAKE GRAPHITE PAINT

Equal to any and superior to most graphite paints on the market today. We fully appreciate the fact that there are as many different "best" graphite paints as there are fish in the sea, and we have no hesitancy at all in recommending Inland Lake brand as being as good, or better a value than you have ever secured for the money. A trial will at once convince you.

Bbls.	½ bbls.	5 gals.	1 gal.
\$1.40 gal.	\$1.40 gal.	\$1.45 gal.	\$1.50 gal.

INLAND LAKE CON-
CRETE AND CEMENT
PAINT

Ready for Use

White, cream, colonial yellow; light, medium and dark cement; stucco brown, terra cotta, stucco green.

Cement or concrete construction will absorb moisture and such discolored surfaces are very unsightly. Inland Lake concrete and cement paints will protect in a thorough manner, any exterior concrete surface, producing a uniform and pleasing surface.

Bbls.	½ bbls.	5 gals.	Gal.
\$1.85 gal.	\$1.90 gal.	\$1.95 gal.	\$2.00

INLAND LAKE CON-
CRETE FLOOR PAINT

Ready for Use

Eight Attractive Colors

Concrete floors, no matter how smooth or carefully made, will give off a sharp dust. This is particularly objectionable in engine rooms or where machinery is operated. For economical reasons, if for nothing else, such floors should be covered with Inland Lake Concrete Floor Paint. One or two coats will save machinery from too-rapid deterioration and make an attractive and easily cleaned floor.

Bbls.	½ bbls.	5 gals.	1 gal.
\$1.85 gal.	\$1.90 gal.	\$1.95 gal.	\$2.00 gal.

INLAND LAKE
WOOD

PRESERVATIVE

American Substitute

for Carbolicum

Avernius Creosote

Creosote products are now being used for preservation of wood more than ever before. The use is not confined to fence posts; telegraph and telephone lines, as well as railroad ties are being treated before using, and longer and better service is being secured. Insure your pole line and posts against the ravages of decay.



Bbls.	½ bbls.	5 gals.	1 gal.
\$0.65 gal.	\$0.70 gal.	\$0.75 gal.	\$0.80

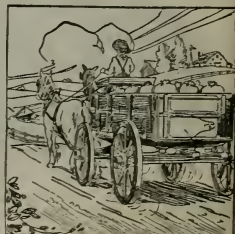
INLAND LAKE
WAGON AND
IMPLEMENT
PAINT

It has been proven time after time that wagons and implements which have been painted, will not only look better but give better service because the wood is protected.

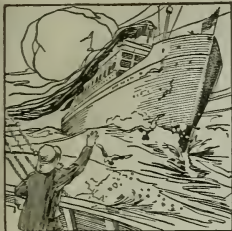
A wagon and implement paint, in order to give satisfaction, must necessarily be tough and must not crack nor peel. All these points have been closely watched in the manufacture of the Inland Lake Brand and its use on your wagons and tools will mean additional service and insurance.

Colors: Blue, green, *vermillion, yellow, black.

Price	1 gal. cans	½ gal. cans	Quarts
Color, except*	\$1.80 gal.	\$1.90 gal.	\$2.00 gal.
Color*.....	2.50 gal.	2.60 gal.	2.70 gal.



RUST, HEAT AND WATERPROOF PAINTS

INLAND LAKE
REDULL

Ready for Use

A structural iron primer of red lead color. A rust preventing paint of exceptional value as a priming coat on vessel bottoms, inside of hulls, or any metal surface.

A high quality paint which has made its own place in the ranks

through unusually satisfactory service.

Put up in....	Bbls.	½ bbls.	5 gal. kits	1 gal. cans
Price..	\$2.00 gal.	\$2.10 gal.	\$2.15 gal.	\$2.25 gal.

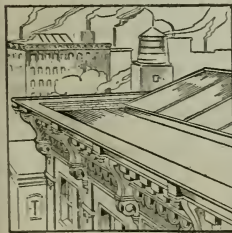
INLAND LAKE
ATRAMENT
PAINT

Ready for Use

A black paint of specially prepared lampblack, oil and varnish. Does not dry flint hard like red lead or oxides. Iron surfaces painted with Inland Lake Atrament after ten years service can be dented with the

thumb nail. Such a paint will never crack nor peel. It will keep moisture from any surface and is of particular value on large surfaces, such as bridges or train sheds.

Put up in....	Bbls.	½ bbls.	5 gal. kits	1 gal. cans
Price..	\$1.55 gal.	\$1.60 gal.	\$1.70 gal.	\$1.75 gal.

INLAND LAKE
ELASTIC STEEL
COATING

Ready for Use

Red, Brown and Black

An excellent rust-proof paint. Will not crack under changes of temperature. The most perfect protection made for galvanized iron. Can be used with very good results on wood. As a protector for

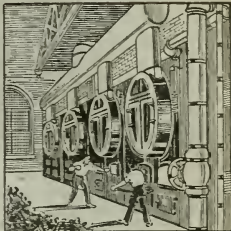
wood, steel and galvanized iron it is hard to beat.

Put up in....	Bbls.	½ bbls.	5 gal. kits	1 gal. cans
Price..	\$1.55 gal.	\$1.65 gal.	\$1.70 gal.	\$1.75 gal.

INLAND LAKE BLACK
BOILER FRONT AND
SMOKE STACK PAINT

Smoke stacks and boiler fronts subjected to very high heat, bottoms of gas holders and inner parts of tanks subjected to the action of water require a specially prepared paint. Linseed oil chars at about 500 degrees and does not withstand water as well as a special mixture. Our experience with Inland Lake Smoke Stack Black, and the high satisfactory results obtained by users of it leads us to recommend it to anyone requiring a good paint for such a surface.

Put up in....	Bbls.	½ bbls.	5 gal. kits	1 gal. cans
Price.....	\$0.80 gal.	\$0.85 gal.	\$0.90 gal.	\$1.00 gal.

INLAND LAKE
WATERPROOF
COATING

Ready for Use

A transparent, colorless liquid for waterproofing concrete surfaces. Does not leave a film on the surface but penetrates, closing all pores and keeping out all moisture. Does not change the color of any surface it is applied to. If a change in color is desired, use Inland Lake Concrete and Cement Paint after you put on one coat of Inland Lake Waterproof Coating.

It is not an experiment, and is in use on some of the biggest concrete jobs in the country right now. It is the best of its kind and will mean money in the pockets of anyone interested in protecting concrete work against moisture and dampness.

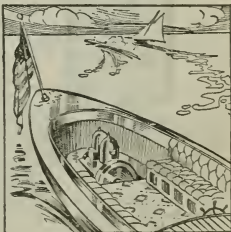
Put up in....	Bbls.	½ bbls.	5 gal. kits	1 gal. cans
Price.....	\$1.85 gal.	\$1.90 gal.	\$1.95 gal.	\$2.00 gal.

INLAND LAKE HEAT
AND WATERPROOF
ENAMELS

Ready for Use

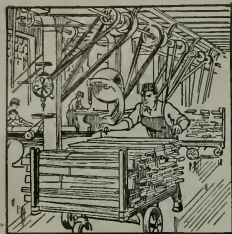
Tuscan Red, White, Green, Maroon Red, Gray and Blue

For surfaces subjected to heat and which should be enameled, we offer our line of Inland Lake Heat and Waterproof Enamels. Prepared especially for use on steam engines, registers and similar surfaces. A trial will at once convince you of the quality behind this particular member of the Inland Lake family.



Put up in....	5 gal. kits	1 gal. cans
Price.....	\$2.15 gal.	\$2.25 gal.

MISCELLANEOUS PAINTS

INLAND LAKE
MILL WHITE

A durable, sanitary, illuminating coating for factory and mill interiors. An oil paint prepared ready for use. The first coat has great covering capacity, and dries with a flat finish. The second is a gloss coat that is dust and germ proof. One of the best Mill White paints on the market today. It

is easily cleaned when necessary by washing. Economical to use and easy to apply. Lasts longer than other mill paints. We have not seen its equal in paints of this kind.

Put up in.....	Bbls.	½ Bbl.	5 gals.	Gals.
1st coat quality	\$1.20 gal.	\$1.25 gal.	\$1.30 gal.	\$1.35 gal.
2nd coat quality	1.35 gal.	1.40 gal.	1.45 gal.	1.55 gal.
In powder form	\$0.04 ½ lb.	\$0.05 lb.	50 lbs.	Less 50 lbs.
.....	.....	.....	\$0.06 lb.	\$0.08 lb.

INLAND LAKE
COLD WATER PAINT

Ten colors, white and black.

Dry powder form and is made ready for use by simply mixing with cold water. For inside or outside work. Can be applied by brush or machine, and can be used to good effect in factories, warehouses, stables, freight sheds, etc. It will not turn yellow, nor will it chip off. Wears three times as long as whitewash.

Put up in...	Bbls.	100 lb. Drum	50-lb. Drum	5-lb. Pkgs.
Price, per lb.	\$0.07	\$0.09	\$0.08	\$0.10

INLAND LAKE
HOT WATER KALSUMINE

White or tints

For general interior decorating. A variety of tints and strong colors. It is prepared so anyone, by following the easy instructions, can do good work.

Put up in...	Bbls.	100-lb. Drum	50-lb. Drum	5-lb. Pkg.
Price, per lb.	\$0.07	\$0.08	\$0.09	\$0.10

TINTING COLORS IN OIL



In making these colors only the very best and strongest pigments are used. They are ground exceedingly fine in pure linseed oil and can always be relied upon to be of uniform strength.

Drop Black.
Lampblack.
Prussian Blue.
Ultramarine Blue.
Raw Umber.
Burnt Umber.
Chrome Yellow.
Yellow Ochre.
Tuscan Red.
Indian Red.
Venetian Red.

Raw Sienna.
Burnt Sienna.
Vandyke Brown.
Chrome Green.
Light Oak Graining.
Dark Oak Graining.
Ash Graining.
English Vermilion.
American Vermilion.
Rose Pink.

PRICES ON APPLICATION

INLAND LAKE SPECIAL PAINTS



Where price is a factor, quality is sometimes the last thing thought of in offering a piece of merchandise, and the user is forced to all sorts of sacrifices as a consequence. This is not the case with Inland Lake special construction paints. These paints are good, honest, substantial, durable paints that will give you more than average service in whatever way they may be used.

COLOR CARDS SHOWING ALL COLORS
MAILED UPON REQUEST

COLORS

Ivory.
Light Straw.
Light French Gray.
Cream Color.
Light Lead.
Light Fawn.
Pure Lead.
Terra Cotta.
Lead Color.
Ceiling Blue.
Shell Pink.
Pale Blue.
Dark Blue.
Light Peach.
Dark Fawn.
Victoria Red.
Bronze Green.
Indian Red.

Sea Green.
Azure Blue.
Apple Green.
Cream Tint.
Medium Olive.
Lemon.
Turquoise Green.
Olive Green.
*Deep Ivy Green.
Columbia Drab.
Blue Gray.
Pure Light Gray.
Gray Stone.
*Deep Scarlet.
Neutral Gray.
*Blind Green.
Lemont Stone
Seal Brown.

Also Black and White.

Put up in....	5 gals.	1 gal.	½ gal.	Quarts
Price except*	\$7.00	\$1.50	\$0.80	\$0.45
Price, with *	8.25	1.75	.90	.50

DRY COLORS

We carry a large and varied stock in too different shades of

English Vermilion.
American Vermilion.
Ultramarine Blue.
Chrome Green.
English Venetian Red.
Prince's Mineral.
Iron Ores.

Yellow Ochre.
Germantown.
Lampblack.
Carbon Black.
Red Lead.
White Lead.
Zinc White.

Directions for using, or any information pertaining thereto, we shall be glad to forward on application.

PRICES ON APPLICATION

INLAND LAKE YACHT WHITE

Ready for Use



A white which is white on any other white. Has a semi-gloss, dries quickly. Is heavy bodied enough to permit of thinning with turpentine if a specially flat surface is desired. It is a paint which can be scrubbed, washed and patched. Is used on Cup Defenders and the highest classes of Yachting Crafts.

In cans of.	1 gal.	½ gal.	Quart
Price.....	\$3.75	\$1.90	\$1.00

STANDARD YACHT WHITE

A scientifically prepared machine mixed paint composed of pure white lead and pure zinc white combined in such proportions as to insure the greatest durability. Absolutely free from make weight or adulteration. Specially adapted for yachts, vessels or outside work.

In cans of.	1 gal.	½ gal.	Quart
Price.....	\$2.50	\$1.35	\$0.70

MARINE WHITE

A good, honest, reliable snow white paint for outside purposes, not so expensive as yacht white. It will give good results.

In cans of.	1 gal.	½ gal.	Quart
Price.....	\$2.20	\$1.15	\$0.60

INSIDE WHITE

A strictly pure paint for interior work, possessing good body and wearing qualities. It should never be used for outside work; will not crack, flake or change color.

In cans of.	1 gal.	½ gal.	Quart
Price.....	\$2.25	\$1.15	\$0.60

INLAND LAKE YACHT WHITE FLAT

Is similar in every respect to our Inland Lake Yacht White, only this has a flat finish.

In cans of.	1 gal.	½ gal.	Quart
Price.....	\$3.75	\$1.90	\$1.00

INLAND LAKE YACHT BLACK

Ready for Use



A full gloss black paint rich in lustre. It gives a fine and lasting finish. Will not turn gray. Will rub in 24 hours.

Will wear longer and retain its black longer than any black made.

In cans of.....	1 gal.	½ gal.	Quarts
Price.....	\$4.50	\$2.35	\$1.20

STANDARD YACHT BLACK

Similar in quality and description with our Standard Yacht White.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$2.75	\$1.45	\$0.75

MARINE BLACK

A pure semi-gloss black paint, in general demand by the larger steamships plying the Great Lakes.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$2.20	\$1.15	\$0.60

COLUMBIA BLACK

Will be found an economical and convenient paint for painting large surfaces where expense must be considered.

In cans and bbl.	Bbls.	½ bbls.	5 gals.	1 gal.
Price...	\$0.85 gal.	\$0.90 gal.	\$0.95 gal.	\$1.00

INLAND LAKE YACHT BLACK FLAT

Is similar in description to our Inland Lake Yacht Black with the exception of having a flat finish.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$4.50	\$2.35	\$1.20

INLAND LAKE MARINE PAINT

READY FOR USE

Our complete line of Marine Paints is fully described in our Marine catalogue, which also shows our full line of Marine Supplies. A copy of this book will be sent upon receipt of 20 cents.



COLORS

No.		No.	
731.	Ivory.	717.	Greenish Stone.
597.	French Gray.	41.	Green Gray.
591.	Light French Gray.	664.	Medium Olive.
86.	Blue Gray.	721.	Cardinal Red.
92.	Gray Stone.	690.	Greenish Tint.
694.	Light Lead.	710.	Sea Green.
724.	Blue Lead.	526.	Apple Green.
534.	Lead Color.	660.	Light Olive.
651.	*Tuscan Red.	704.	Olive Green.
525.	Robin's-Egg Blue.	711.	Nile Green.
728.	Ceiling Blue.	708.	Moss Green.
584.	*Cobalt Blue.	652.	Ivy Green.
729.	Shell Pink.	686.	Deep Ivy Green.
537.	Pearl Gray.	590.	Lemon Yellow.
541.	Light Heliotrope.	698.	Cream Tint.
42.	Light Terra Cotta.	680.	Yellow Stone.
666.	Pompeian Red.	527.	Bedford Stone.
581.	*Light Green.	539.	Brown Buff.
595.	Light Straw.	695.	Drab Stone.
682.	Canary.	533.	Yellow Brown.
542.	Yellow Drab.	655.	Turquoise Green.
693.	Modish Tan.	732.	Maroon.
697.	Lemont Stone.	544.	Dark Green.
		730.	D. & C. Green.
		731.	Black.
		732.	White.

In Buff, Venetian Red, Spruce, Dark and Light Lead, and Light and Dark Green

Are quite different from ordinary paints for the reason that the components are so selected and put together as to secure the maximum resistance to the usual wear and tear to which floors and decks are subject. An important property of these paints is that after they have become well set or nearly dry, water will harden them. They are equally good for vessels' decks or ordinary floors, whether applied over the usual canvas coating or to bare wood.

In cans of...	1 gal.	½ gal.	Quart
Price.....	\$1.65	\$0.85	\$0.45



French White Zinc. Green Seal. Paris Brand
French Zinc Whites are unequaled by any white paint now on the market.

Made by the French or Belgian process, they give the maximum of whiteness when ground in poppy-seed oil and thinned for use with clear spirits of turpentine. This paint, over a proper foundation, will give a fine, smooth, velvet-like finish that cannot be surpassed. Driers containing lead base should not be used, as they tend to discolor the zinc.

25 lb. tin pails.....	per lb.	\$0.25
12 ½ lb. pails.....	"	.26
5 lb. cans.....	"	.28
1 lb. can.....	"	.30

ALL THE ABOVE WITH OR WITHOUT GLOSS,
AS DESIRED

COLOR CARD FREE UPON REQUEST

Colors, except *	Gals.	Half gals.	Quarts
Colors, with *	\$2.20	\$1.15	\$0.60
	2.50	1.35	.70

PRICES IN BARREL LOTS ON REQUEST

INLAND LAKE MARINE PAINTS

ANTI-FOULING COMPOSITION, COPPER PAINT, BRONZES, POT LEAD, ETC.



INLAND LAKE BRONZE Anti-Fouling Paint

The best copper bronze paint on the market. For bottoms of racing yachts and motor boats. The liquid and powder are in separate packages and mix easily in any quantity desired.
Do not confound this with ordinary bronze liquid. It is entirely different, being a wood preservative as well as an insecticide for marine growths.

In cans of...	1 gal.	½ gal.	Quart
Price.....	\$7.00	\$3.50	\$1.85

INLAND LAKE COMPOSITE

For bottoms of all steam and sailing vessels, either wood, iron or steel. Gives a fine sailing bottom and will keep in all climates. Absolute freedom from fouling.

Colors: Red, green, white and brown.

In cans of...	1 gal.	½ gal.	Quart
Price.....	\$3.00	\$1.65	\$0.85

DEVOS'S METALLIC COPPER PAINT

Made in three shades—brown, red and green. An anti-fouling paint for use on the bottoms of vessels. The vessel may be put in the water as soon as the paint has been applied.

In cans of...	1 gal.	½ gal.	Quart
Green.....	\$3.00	\$1.60	\$0.90
Red.....	2.50	1.35	.80
Brown.....	2.50	1.35	.80

VERNOSITE BRONZE

Colors: Natural copper, sea green and vermilion. A pure copper bronze incorporated with "Vernosite" Spar varnish. It will protect bottoms from barnacles and sea growth, while the smoothness of the varnish makes it desirable for the bottoms of racing yachts.

In cans of...	1 gal.	½ gal.	Quart
Price.....	\$5.00	\$2.60	\$1.35

KOPPER KOTE

Colors: Natural copper and bronze green. The pigment of this coating is pure copper mixed with a liquid specified by the government as the best under-water preservative. Will not turn color or foul under any conditions and is suitable for wood or steel bottoms.

In cans of...	1 gal.	½ gal.	Quart
Price.....	\$3.50	\$1.85	\$0.90

INLAND LAKE POT LEAD COMPOSITION

Consists of just the proper amount of PURE GRAPHITE for a highly polished result and is combined with the best known wood preservative. Will materially reduce the "skin friction" of any craft and is more durable.

In cans of...	1 gal.	½ gal.	Quart
Price.....	\$2.50	\$1.35	\$0.70

BOOT TOP PAINT

Colors: Red and Green

Made so it will stand the rapid changes from wet to dry better than any paint brought to our notice. Keep your water line discernible.

In cans of...	1 gal.	½ gal.	Quart
Price.....	\$2.50	\$1.35	\$0.70

STAINS, FILLERS, SEAM PAINTS AND CANOE ENAMELS

INLAND LAKE SEAM COMPOSITION AND SEAM PAINT

For deck and all other seams, or for any place where a perfectly tight joint is wanted. It does not become hard, swelling and shrinking with the wood and iron. One hundred pounds of seam composition will fill 3,000 feet of a seam ¼ inch wide and ¼ inch deep, for which two gallons of Seam Paint are required.
Composition in 25 and 12½ lb. cans....per lb. \$0.13
Composition in 5 and 2 lb. cans..... " .16
Paint in ½ gallon cans.....each \$1.20
Paint in ¼ gallon cans..... " .65
Paint in ⅛ gallon cans..... " .45
Paint in 1/16 gallon cans..... " .30

LIQUID WOOD FILLER

In 1 gallon cans.....each \$2.00
In ½ gallon cans..... " 1.10
In ¼ gallon cans..... " .60

OIL STAINS

Ash, Cherry, Dark and Light Oak, Mahogany, Rosewood and Walnut.

In 1 gallon cans.....each \$1.80
In ½ gallon cans..... " .85
In quart cans..... " .50

VARNISH STAINS

Colors, Cherry, Mahogany, Rosewood, Oak, Golden Oak, Walnut and Malachite Green.

Varnish stains are made for work that isn't important enough to employ a painter. Better give it a finishing coat of good varnish. If what you want to stain has never been painted, or has been painted a dark color, or has been varnished, give it a coat of light buff colored paint before staining. Use plenty of turpentine in making the buff color.

In cans of...	1 gal.	½ gal.	Quart	Pint
Price.....	\$1.85	\$0.95	\$0.50	\$0.35

OIL STAINS

Colors: Cherry, Mahogany, Rosewood, Light Oak, Dark Oak, Walnut, Ebony, Green

Oil stains are made for painters, but anyone can use them. They must be covered with one or more coats of varnish. They work best on bare wood. If you want to stain something that has been painted or varnished before and can't get the old coat off, paint it with a coat of light buff before you stain it.

In cans of...	1 gal.	½ gal.	Quart	Pint
Price.....	\$1.60	\$0.85	\$0.45	\$0.25

DEVONIAN SPIRIT STAIN

No. 58. Malachite Green.
No. 57. Dark Mahogany.
No. 54. Golden Oak.
No. 53. Weathered Oak.
No. 52. Antwerp Oak.
No. 51. Mission Oak.
No. 50. Flemish Oak.

For finishing interior surfaces in natural wood colors with one application, producing a flat or dead finish.

The Mission or Antique effect frequently desired is obtained by the use of these stains at a trifling cost for material and labor.

Surfaces treated with these stains may be further finished with Hard Wax Polish if a semi-gloss, satin-like surface is wanted.

In cans of...	1 gal.	½ gal.	Quart	Pint
Price.....	\$2.50	\$1.35	\$0.70	\$0.40

CANOE ENAMELS

Colors: Indian Red, Vermilion, Moss Green, Tuscan Red, Orange, Emerald Green, Dark Gray and Yale Blue

Our Canoe Enamel will dry quickly with a high gloss of weather-resisting qualities; unaffected by sun or water.

In cans of...	1 gal.	½ gal.	Quart	Pint
Price.....	\$4.75	\$2.40	\$1.25	\$0.65

VARNISHES AND ENAMELS

INLAND LAKE FLOOR VARNISH



For finishing and preserving floors. Will not scratch or turn white.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$2.50	\$1.35	\$0.70

INLAND LAKE INTERIOR FINISH

A high grade interior varnish. Is not affected by gases, steam or water; dries dust free in six to eight hours and may be rubbed to a dull finish in 48 hours and polished in four to five days.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$2.50	\$1.35	\$0.70

INLAND LAKE No. 1 COACH VARNISH

Our own brand; a durable and elastic varnish for inside or outside work.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$2.00	\$1.10	\$0.60

INLAND LAKE DAMAR VARNISH

Made from the best selected Damar gums. Not adapted for use on furniture or outside work.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$2.50	\$1.35	\$0.70

INLAND LAKE EXTRA HARD OIL FINISH

Specially adapted for fine interior work; dries in twelve hours with fine lustre.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$2.50	\$1.35	\$0.70

INLAND LAKE SPAR VARNISH

A varnish specially manufactured for us, guaranteed in every respect. It will not turn white, crack or blister.

In cans of.....	1 gal.	½ gal.	Quart	Pint
Price.....	\$3.00	\$1.65	\$0.85	\$0.50

INLAND LAKE MOTOR BOAT FINISH

A high grade varnish. Quick drying, of great durability; will not turn white. Useful in emergencies for touching up, chafing, etc.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$4.00	\$2.10	\$1.10

CROCKETT'S SPAR COMPOSITION



Crockett's Spar Composition is composed of the best material purchasable. It is the most durable, the best known and has the largest sale of any marine varnish manufactured. Positively salt and fresh waterproof, it is invaluable for exterior marine work of every kind and as its name indicates, particularly adapted for spars of steamships, yachts and canoes.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$4.75	\$2.45	\$1.25

SPAR COATING

A perfect finish for all exterior wood and iron work on vessels and other structures exposed to frequent changes in weather and temperature. Good body, light in color and free working.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$5.00	\$2.60	\$1.35

No. 1 CROCKETT'S PRESERVATIVE

The best interior varnish for its purpose and price that brains and experience can produce. Less liable to scratch than any finish known. Is not affected by contact with chemical gases, steam, or washing with hot or cold water and soap; can be rubbed and polished or left with an eggshell gloss.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$3.25	\$1.80	\$0.95

NAVALITE

A marine varnish of Chicago production. It is very pale and elastic, does not spot or crack, dries safe from dust in ten hours and gives a very smooth finish.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$4.75	\$2.45	\$1.25

DURABLE SPAR

For severe exposure and moisture. Dries free from dust in 8 to 10 hours and hard in 36 to 48 hours.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$3.25	\$1.75	\$0.90

INLAND LAKE CANOE VARNISH

In cans of.....	Quart	Pint
Price.....	\$1.00	\$0.50

G. B. C. & CO.'S SPECIAL MARINE VARNISH

An inexpensive varnish for extensive work where price has to be considered. The choice of large manufacturers who thoroughly tested it as to color, drying qualities, body and durability. In 5 gal. cans only.....per gal. \$2.00

MIXING VARNISH

In bulk for mixing with paint to give glossy effect. In any quantity.....per gal. \$1.00

ENAMELS

EMIL CALMAN & SON'S MARINE WHITE

ENAMEL

Ready for use and much easier to apply than most white or zinc paints. Will not discolor. It is the handsomest and most durable enamel for hulls and cabins.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$7.00	\$3.60	\$1.85

HARLAND & SON'S ENGLISH MADE ENAMELS

Made in England for the special use of people wanting something that is serviceable, durable and which will not discolor. It has become very popular since its introduction, several years ago.

In cans of.....	1 gal.	½ gal.	Quart
Price.....	\$8.00	\$4.10	\$2.25

SOAPS



Fig. 001



Fig. 002



Fig. 003



Fig. 004

Fig. 001 AMERICAN FAMILY SOAP

American Family Soap is a firm hard soap which will not waste away in the water like soap made from soft greases or cheaper grades of stock. It may be used equally well in hot or cold water; always lathers freely and is a much larger cake than the ordinary yellow laundry soap on the market. Packed in cases of 66 bars.

Price per case.....\$2.95

Fig. 002 DUSKY DIAMOND TAR SOAP

French hard milled; contains Georgia pine tar and coconut oil. Lathers freely. Extra large cakes each in carton and packed 50 and 100 cakes in case.

Price per case of 50 cakes.....\$2.50

Price per case of 100 cakes.....4.90

Fig. 003 HAND PUMICE

Kirk's Hard Water Pumice is an ideal mechanics' soap. It is sufficiently hard so it will not wash away. Each cake packed in a carton, 12 cartons to a paper box, and 50 or 100 cartons to a wooden box.

Price per box of 12 cartons.....\$1.00

Price per box of 50 cartons.....2.50

Price per box of 100 cartons.....4.90

Fig. 004 ARMOUR'S LIGHTHOUSE SOAP

A very good soap, used with equal success in hot or cold water. A firm, hard soap which lathers freely. Packed 66 bars to the case.

Price per case.....\$2.85

ARMOUR'S WHITE FLOATING SOAP



Fig. 005

A hard milled, white floating soap, suitable for the bath or laundry. Very economical to use. Packed 100 bars to the case.

Price per case.....\$8.50

THE SOAP IN THE TUBE



Fig. 006

A self-lathering, condensed, grease removing soap. Does twice the work in half the time. With a little warm water it will lift all grease, paint stains. No grit.

Price per tube.....\$0.10

Price per pint can......35

AMERICAN CROWN SOAP

Made of pure vegetable oils and free from all injurious chemicals. Will not injure the highly finished parts of automobiles and other vehicles.

The use of American Crown Soap on harness, cushions, buggy tops, etc., makes the leather look like new. It does not injure the hands like ordinary harness soap.

American Crown Soap will "knock grease off the hubs" of your automobile or carriage. Use a little on a sponge. For caked grease use a brush.

American Crown Soap will remove all "stable stains." Wash with warm suds and rinse.

American Crown Soap will benefit a cracked hoof when washed with suds and rubbed in thoroughly.

Packed in 12½, 25 and 50 pound pails.

Price per 12½ pound pail.....\$2.00

Price per 25 pound pail.....3.90

Price per 50 pound pail.....7.75



Fig. 007



Fig. 007

BLACK SOAP

Black commercial soft soap. Price per pound in barrels of about 500 pounds.....\$0.06

SOAP POWDERS AND CLEANSERS



Fig. 6148



Fig. 6149



Fig. 6150

Fig. 6148 GOLD DUST

In No. 4 cartons, containing about 4 lbs. each. Price per case of 24 packages\$4.50

Fig. 6149 LIGHTHOUSE CLEANSER

In cases of 100 tins. Price per case.....\$3.75

Fig. 6150 LIGHTHOUSE WASHING POWDER

In No. 4 cartons, containing about 4 lbs. each. Price per case of 24 packages.....\$3.75

SAPOLIO

In cases of 36, 72 and 144 cakes each:

Price per case of 36 cakes.....\$ 3.00

Price per case of 72 cakes..... 5.50

Price per case of 144 cakes..... 10.00

SAL SODA

In barrels of 336 lbs. each:

Price per 100 lbs.....\$2.90

Can furnish smaller quantities at a slight increase in price.

SODIUM PHOSPHATE •

In barrels of 600 lbs. each:

Price per 100 lbs. in bbl. lots.....\$10.00

Smaller quantities, per lb..... .15

BORAX

In cases of 12 5-lb. packages or 48 1-lb. pkgs.

Price per box of 12 fives.....\$5.30

Price per box of 48 ones..... 5.00

SCOURENE

In boxes of 100 cakes each:

Price per box.....\$3.75

SODA ASH

In barrels of 336 lbs. each:

Price per 100 lbs.....\$2.90

LYE

Concentrated Lye, in cases of 48 1-lb. cans:

Price per case.....\$3.25

CHLORIDE OF LIME

In boxes of 50 cans each:

Price per box.....\$4.50

METAL AND FURNITURE POLISHES

We carry in stock only those grades of polishes which we know from experience will give the results claimed for them. All polishes submitted to us, are put into actual use before we consider them for resale.

Of the different polishes listed below, two are of our own manufacture—the Inland Lake and Great Lakes Metal Polishes. These two polishes have a very large following, especially in the Marine trade, and are highly satisfactory and durable polishes.

INLAND LAKE METAL POLISH

In cans of 1 gal. ¼ gal.
Price \$1.25 \$0.35

GREAT LAKES METAL POLISH

In cans of 1 gal. ¼ gal.
Price \$1.00 \$0.30

LEMON POLISHING OIL

For cleaning and polishing any varnished surface.
In cans of 1 gal. ½ gal. 1 qt. ¼ gal. 1/8 gal.
Price \$1.75 \$0.90 \$0.50 \$0.25 \$0.15

INLAND LAKE BRIGHT METAL PROTECTOR

It retains the luster on all highly polished metal surfaces.

In cans of 1 pt. ½ pt.
Price \$0.75 \$0.40

DEVON'S METAL POLISH

In cans of 1 gal. ¼ gal.
Price \$0.75 \$0.40

TOBEY POLISH

(The shop formula of The Tobey Furniture Company, Chicago and New York, makers of the famous de Luxe Tobey-Made Furniture.)

Not for mops; but for floors, etc.; but simply a cleaner and conditioner of highest quality (for use on the finest surfaces of varnish, enamel and shellac—especially of fine furniture, woodwork, and automobile bodies).

It is made by the Tobey shop experts, primarily for their own use. It has been sold to retail customers of the Tobey stores for a number of years, but only recently has been offered in the general market.

Price, 4-oz. bottle \$0.25
Price, 12-oz. bottle50
Price, 1-gal. bottle 1.00
Price, ½-gal. jug \$1.75
Price, 1-gal. jug 3.00



Fig. 938A



Fig. 938B



Fig. 933C



Fig. 938D



Fig. 935E

HY-POL dusts thoroughly, cleans, polishes and disinfects in one easy operation. It is quick drying and leaves no greasy deposit. It revives the varnish and makes old finishes look like new.

Hy-Pol removes "bloom" or smoky blue film from mahogany or other furniture, cannot freeze and does not injure the hands. Time has no effect on furniture daily dusted with **Hy-Pol**. **Hy-Pol** is unequalled for use on automobiles, carriage bodies, tops, leather cushions, etc. Cleans thoroughly, polishes quickly and leaves leather soft and pliable.

Price
12 oz. \$0.50 1 gal. \$2.75
1 qt. 1.00 5 gal. per gal. 2.65
½ gal. 1.50

SEMDAC LIQUID GLOSS

Not illustrated

Makes Old Things Look Like New

Dusts, cleans and polishes hardwood floors, pianos, furniture, woodwork, fixtures, etc., at one operation. Restores lustre to all finished wood surfaces.

Packed in Gal. ¼ Gal. Qt. Pt.
Price \$1.00 \$0.55 \$0.30 \$0.20

STANDARD FLOOR DRESSING

Not illustrated

The modern sanitary floor oil for use on wood floors in stores, shops, public institutions, etc. Cleans and polishes as well as preserves the floors.

Packed in 5 gal. 1 gal.
Price \$3.50 \$1.75

PEERLESS AUTO TOP DRESSING

Not illustrated

An elastic durable renovator for mohair, leather and canvas tops, makes top thoroughly waterproof, and at same time will keep it soft and pliable. Dries over night. Color, black.

Per quart \$1.00

Fig. 938E O- CEDAR POLISH

Cleans as it Polishes

O-Cedar Polish is well and favorably known and is widely advertised in connection with the O-Cedar Polish Mop shown on another page.

Packages and Prices List per doz.

4-oz. bottles \$ 3.00
(1 doz. in carton or 6 doz. in crate, 57 lbs.)
12-oz. bottles 6.00
(1 doz. in carton or 6 doz. in crate, 121 lbs.)
Qts. (1 doz. to box, 31 lbs.) 12.00
½ gal. (1 doz. to box, 59 lbs.) 18.00
Gal. (½ doz. to box, 55 lbs.) 30.00

Fig. 938C O- CEDAR POLISH FOR AUTOMOBILES

All sizes are packed in round tins for the convenience of the motorist and to prevent breakage. There is no change in the formula only in the package. Is meeting with a rapid sale wherever introduced.

List per doz.
4-oz. tins (3 doz. in box, 16 lbs.) \$ 3.00
12-oz. tins (2 doz. in box, 25 ½ lbs.) 6.00
Qt. tins (1 doz. to box, 31 ½ lbs.) 12.00
½-gal. tins (1 doz. to box, 37 ½ lbs.) 18.00
Gal. tins (½ doz. to box, 55 lbs.) 30.00

CYLINDER AND ENGINE OILS OILS AND GREASES



Our position as one of the largest distributors of oils and greases in the middle west has enabled us to perfect a line which is second to none and is identified by the Inland Lake label, with which each package is marked.

Inland Lake oils and greases are now being used throughout the United States and Canada, as well as a number of foreign countries, and are running true to form in giving added life to engines and machinery operating under practically all conditions and in all climates.

Give Inland Lake lubricants a trial. They will save you money and preserve your equipment. Engineers seldom go back to the other brand after using Inland Lake.

Owing to daily fluctuations in the market, we are unable to insert prices in this catalog. We are usually able to quote a little lower than the prevailing market prices on account of the immense quantities we purchase, and large stocks on hand. For this reason we are invariably in position to make shipment the same day your order is received, for any amount from a gallon to a hundred barrels.

WE MAKE THE USUAL CHARGES AND REBATES FOR OIL PACKAGES, AS FOLLOWS:

Wood Barrels, about 52 gallons.....	Free	1 gallon cans.....	\$0.25
Wood Half Barrels, about 30 gallons.....	\$0.50	Steel Drums, 55 gallons.....	5.00
10 gallon cans.....	1.00	30 gallon steel drums.....	3.00
5 gallon cans.....	.50	15 gallon steel drums.....	1.75

The Steel Drums are all fitted with detachable faucets and all packages are credited at full purchase price if returned (freight prepaid) in good condition within a reasonable time.

INLAND LAKE STEAM CYLINDER OIL

Made from the highest grade filtered stock and compounded in a scientific manner. Particularly well liked by engineers who want the best and insist upon getting it.

Price per gallon..... \$ —

INLAND LAKE COLUMBIA STEAM CYLINDER OIL

Made especially to meet the demand for a medium priced oil, and worth more than the price we ask for it.

Price per gallon..... \$ —

INLAND LAKE FARM MACHINERY CYLINDER OIL

Low priced, but by no means low grade. A first class oil, adapted to farm machinery use.

Price per gallon..... \$ —

INLAND LAKE STANDARD GAS ENGINE OIL

Made especially for gasoline engine use. Feeds freely, won't gum, carbonize or dirty the plugs.

Price per gallon..... \$ —

INLAND LAKE MARINE OIL

The best oil to use on all types of marine motors. Very well spoken of by both sporting and commercial boatmen.

Price per gallon..... \$ —

INLAND LAKE ENGINE OIL

A free flowing oil for general engine and shafting use. Uniform in quality and reliable under the most severe conditions.

Price per gallon..... \$ —

INLAND LAKE COLUMBIAN ENGINE OIL

A high grade engine oil, which while not as expensive as the one above, will give better service than many other medium priced oils.

Price per gallon..... \$ —

ADVERTISED LUBRICANTS

Many users of oils and greases have a preference for some of the brands being extensively advertised in trade journals, and in order that none of our customers need be disappointed, we shall be glad to furnish promptly any grade they may have use for. Among those which we are in position to ship immediately are:

Mobiloids. Texas. Polarine. Sullivanoids. Havoline. Monogram. Neatsfoot.

The above are all furnished at prevailing market prices.



MISCELLANEOUS LUBRICANTS

INLAND LAKE CUP GREASE

We believe that in our Inland Lake cup grease we approach closer to having the perfect article than any other dealer. This grease is a solidified oil compound for engine bearings, and all other places where it is possible to substitute grease for oil. It will withstand high heat and lowest cold temperatures and retains the same body always.

It will not gum, corrode nor deposit sediment, and possesses remarkable friction reducing qualities. We can furnish it in following grades:

No. 2 Medium Soft. No. 3 Hard. No. 4 Extremely Hard.

Furnished in barrels of 425 lbs., half barrels of 275 lbs., and in 25, 10 and 5 lb. cans.

Price per lb. depends on quantity ordered.



INLAND LAKE TRANSMISSION GREASE

This is not a graphited grease, and is of a quality that will add considerable life to transmissions and differentials. We sell as much of this grease as we do of any of the advertised brands shown in this book and know it is giving satisfaction. Packed in 25, 10 and 5 lb. cans.

Price per lb. depends upon quantity ordered.

INLAND LAKE AXLE GREASE

A high grade axle grease, for use on farm machinery and wagons for city service. The ingredients in this axle grease are of a far better grade than those usually found in greases selling for more than we ask for ours. Packed in barrels, half barrels, 100 lb. kegs and 25, 15 and 12½ lb. cans.

Price per lb. depends upon quantity ordered.

INLAND LAKE SLUSHING COMPOUND

Used in shipyards for greasing the ways, and in unloading iron rails and heavy pieces from ships. Packed in barrels, half barrels and 50 and 25 lb. cans.

Price depends upon quantity ordered.

INLAND LAKE GRAPHITE GREASE

The perfect lubricant for universal use.* Can be used with very good results for farm, mechanical and industrial purposes. Packed in barrels, half barrels, 100 lb. kegs and 50 and 25 lb. cans.

Price per lb. depends upon quantity ordered.

INLAND LAKE GENERAL PURPOSE LUBRICATING OIL

Adapted for bearings, journals and all moving parts of machinery, and will serve very well where special oils for special purposes are not necessary. Price per gallon..... \$ —

INLAND LAKE CASTOR MACHINERY OIL

Used by the speed kings in all the important automobile races, and by racing hydroplanes. A high grade lubricant that is rapidly making its way to the front on account of efficient service.

Price per gallon..... \$ —

INLAND LAKE ICE MACHINE OIL

Specially compounded. A clear colorless oil compounded especially for ice machine use. Will not congeal or become thick under lowest temperatures. Price per gallon..... \$ —

INLAND LAKE DYNAMO OIL

The high speeds of dynamos and motors have no effect on this oil, and we particularly recommend it to any one desiring an oil for high speed use. Price per gallon..... \$ —

INLAND LAKE COMPRESSOR OIL

An air compressor oil must be of even consistency under all temperatures to properly serve the purposes for which it is intended. Inland Lake compressor oil is one of the best we have seen for such service. Price per gallon..... \$ —

INLAND LAKE SPERM OIL

Meets the requirements of the United States government, Navy department, for lifeboat use. Price per gallon..... \$ —

INLAND LAKE SIGNAL OIL

Used extensively for marine and railroad signal service, and is compounded to give the best service under all conditions. Price per gallon..... \$ —

INLAND LAKE BLOCK OIL

The best block signal oil. Used by all railroads. This oil must be a quality article in every way in order to do its duty efficiently. Price per gallon..... \$ —

INLAND LAKE WINTER STRAINED LARD OIL

Manufactured by Armour & Co., and is made especially for winter use, when an oil that will not congeal, is in demand. Price per gallon..... \$ —

INLAND LAKE No. 1 LARD OIL

While not as pure as our Winter Strained Lard Oil, our No. 1 will serve very well for thread cutting and in other places where price is an object. Price per gallon..... \$ —

INLAND LAKE THREAD CUTTING COMPOUND

A heavy oil used principally for thread cutting and die work; we have sold a very large amount of this oil; it is the best for the purpose. Price per gallon..... \$ —

OILDAG—GREDAG

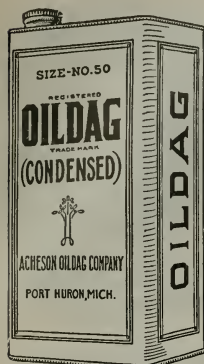


Fig. 406A

Oildag is Defeculated Graphite diffused in oil. By some it is called Liquid Graphite, the graphite being so fine that it flows wherever oil will flow. It is sold in concentrated form in cans which contain sufficient to charge 1, 5, 10 or 50 gallons of oil. You mix it with the oil you use regularly. It is an ideal lubricant for motor boat engines, steam engines, bearings, and for general use.

Defeculated Graphite, as it is presented in Oildag, will not clog filters or mechanical oilers or prove anything but extremely helpful in assisting to perfect lubrication.

PACKAGES AND PRICES

No. 1 Can, containing charge for 1 gallon oil; one dozen in a box; sold only by the box.....	\$ 2.50
No. 5 Can, containing charge for 5 gallons oil.....	1.00
No. 10 Can, containing charge for 10 gallons oil.....	2.00
No. 50 Can, containing charge for 50 gallons oil.....	10.00

Gredag differs from all other greases in that it contains pure, gritless Acheson-Graphite. Quickly and thoroughly forms the graphite film necessary to perfect lubrication and the proper protection of gears. This film will not break under pressure when full power is suddenly thrown upon the gears, but it assists the teeth to silently engage in mesh and makes the car run quietly and sweetly. For universal couplings, clutch thrust bearings, wheel hubs, cup use, etc., Gredag is unequaled.



Fig. 406B

GRADES OF GREDAG

Gredag is made in several grades and consistencies to meet all requirements, the grades for automobile use being as follows:

No. 31, Semi-Fluid; No. 32, Soft; No. 33, Medium; No. 63, Medium, of a spongy nature.

PACKAGES AND PRICES

Size of Package	Grades 31, 32, 33 and 63
1-lb. can	per can \$0.30
5-lb. can	" 1.25
10-lb. can	" 2.40
25-lb. can	" 5.25
50-lb. can	per lb. .20
100-lb. key	" .17
200-lb. bbls.	" .16
400-lb. bbls.	" .15

SMOOTH-ON COMPOUND



Smooth-On Compounds are chemically prepared iron compounds made and sold in a powder form and used by mixing with water to the consistency of stiff putty. When in this state they must be applied immediately, because the metallizing action of these cements is rapid, acting without heat, and in a few minutes will get too stiff to work. In a few hours they metallize as hard as iron.

These cements are made for a number of different purposes as follows:

No. 1 and No. 2 (blue labeled cans). For repairing leaks or breaks in castings and for making connections in steam or hydraulic work. No. 1 is quick hardening, No. 2 slow hardening, and hydraulic. Applied as a paste or putty.

No. 3 Elastic Cement (gray labeled cans). Paste form, for use on all seams of boilers or tanks to stop leaks, also for boiler patching and for screw thread joints. Applied as a paint, paste or putty to hot or cold metal.

No. 4 Castings (yellow labeled cans). An iron cement in powder form for repairing blemishes, blow-holes, or defects in iron or steel castings. Made in two grades—A, for fine castings; B, for coarse castings. Applied as a putty.

No. 5 Calking Cement (red labeled cans). For plumbers, in powder form in two strengths—Regular and Special—Regular for soil pipe and greenhouse work, Special for water and gas main joints for high pressure.

No. 6 RIVET CEMENT—WHITE LABELED CANS

A metallic putty cement for use on ships' sides, iron, steel or wood construction work, metal skylights, vault lights, etc. Prepared in putty form, ready for use, in air-tight cans. Applied with a trowel or putty knife and is very easy to work.

LIST PRICES "SMOOTH-ON"

Rivet Cement Nos. 1 and 2 in 1, 5, 10 and 25-lb. tins.....	per lb. \$0.50
Elastic Cement No. 3 in 1, 5, 10 and 25-lb. tins.....	" .50
Castings No. 4, Grades A and B, in 1, 5, 10 and 25-lb. tins.....	" .50
Joints No. 5 in 1, 5, 10, 25-lb. tins.....	" .50
Rivet Iron Cement No. 6 in 1, 5 and 10-lb. cans.....	" .50

DIXON'S SILICA-GRAPHITE PAINT

Economical for Priming and Finishing Boats and Iron and Steel Construction



Dixon's Silica-Graphite paint has been on the market for nearly fifty years and is generally looked upon as the standard priming and finishing agent for iron, steel and other metal surfaces. The pigment is a natural combination of Silica and Flake Graphite. Nothing but the best linseed oil is used as a vehicle. The pigment, being inert, no chemical action is possible, either between it and the oil, or as a result of outside attack from acids or alkalis.

Flake graphite being a lubricant, properly insures thorough application as well as a saving in labor and brushes. The average spreading rate is 500 square feet per gallon on metal surfaces.

Dixon's Silica-Graphite Paint is non-explosive and non-poisonous to handle.

Made in four colors and only one quality—the best. The colors are: Natural, black, olive green and dark red. The black is especially prepared for steel smoke stacks, boiler fronts, ornaments, iron work and surfaces subjected to sulphurous fumes.

SPECIFICATIONS FOR STEEL AND IRON CONSTRUCTION WORK

At the Mill—Before painting, all surfaces must be thoroughly cleaned, freed from loose scale, dirt and moisture. The entire surface shall then be given a well-applied coating of Dixon's Silica Graphite Paint, dark red. Parts to be in contact and closed, shall receive before assembling a coat of the same material.

After Erection—Places damaged by abrasion shall first be retouched. The entire work shall then be given a second coat of Dixon's Silica-Graphite Paint, of a different color than the mill coat.

The top of the package to be removed, and the paint properly stirred. No adulterating oils or thinners shall be used. The cleaning, painting and materials to be subject to inspection.

The paint to be furnished to the mill and building site, in original packages, READY MIXED for use.

SPECIFICATIONS FOR STEEL AND IRON MAINTENANCE WORK

Cleaning—All broken or blistered paint, all rust, grease and dirt, must be removed by wire brushes, scrapers, blow torch, or by sand blasting with fine sand. The method to be selected and made part of the contract. Surfaces must be painted the day they are cleaned.

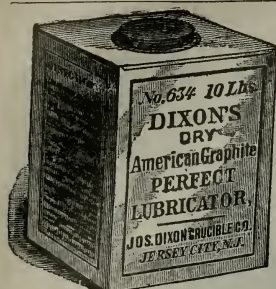
Repainting—All surfaces shall be given two thorough coats of Dixon's Silica-Graphite Paint. The second coat to be applied only when the first is thoroughly dry, and to be of a different color. Surfaces must be perfectly dry when painted. The best round bristle brushes to be used.

The top of the package to be removed, and the paint properly stirred. No adulterating oils or thinners shall be used. The cleaning, painting and materials to be subject to inspection. Paint to be furnished in original packages, READY MIXED for use.

THINNED, READY MIXED

1 gallon in pail	per gal. \$2.25	25 gallons in ½ barrel	per gal. \$1.70
5 gallons in keg	per gal. 2.15	Barrel (about 50 gallons)	per gal. 1.65
10 gallons in keg	per gal. 1.75		

DIXON'S PAINT IS SOLD ONLY READY MIXED, NOT IN PASTE FORM



DIXON'S GRAPHITE LUBRICANTS

The Only Perfect Lubricator



The smoothness and softness possessed by graphite in a more remarkable degree than by any solid substance, early suggested its use as a lubricant.

Since its introduction, the field of its employment has gradually widened to include its regular use with oils or greases, with water, and in some cases unmixed with other materials.

Dixon's Graphite has now an established place in the ordinary and usual routine of the engineer's work. It is successfully used in the lubrication of great motors, compound engines, locomotives, heavy shaft lines, and gears. It is of special value for lubricating cylinders and valves where lubrication is difficult, owing to high pressure and the use of superheated steam. It saves wear and tear in mill-steps, turbine steps, gears, heavy bearings, and in all cases where friction is severe.

Scientific theory and practical experience clearly indicates the superiority, for all purposes of lubrication, of the flake graphite rather than the amorphous or non-crystalline graphite.

Dixon's Lubricating Graphite is all of one quality, but is ground into several degrees of fineness, or, rather, sizes of flake.

No. 1 is the largest flake, and is best adapted for heavy or loose bearings, cylinders of blowing engines, etc.

No. 2 is more finely pulverized. The experience of practical engineers seems to demonstrate beyond any question that for cylinder lubrication it is the best size.

No. 635 is specially prepared graphite which is ground to a flour-like degree of pulverization; being ground to such a degree, of fineness, it mixes readily and stands up well in even light oils. It will not gum or stick, and is the very best graphite for valves, all parts of air-brakes and gas engine cylinders.

Package	Price No. 1 and No. 2	Price No. 635
1-lb. paper can.....each	\$0.40	\$0.75
5-lb. tin can....."	1.75	.65
10-lb. tin can....."	3.25	.65
25-lb. boxes....."	7.50	
50-lb. boxes....."	14.00	
100-lb. kegs.....per lb.	.28	.60
200-lb. half barrels....."	.27 1/2	
400-lb. barrels....."	.27	

Trade Nos. on No. 1 and No. 2 are as follows:
 1-lb. package. No. 632 25-lb. boxes .. No. 644
 5-lb. tins No. 633 50-lb. boxes .. No. 645
 10-lb. tins No. 634

DIXON'S BOILER GRAPHITE

Dixon's Boiler Graphite No. 2 is prepared from finely ground flake graphite. Used according to instructions it is the most simple and effective scale remover known. It does not act chemically, cause foaming, affect the quality of steam or injure metal. Write for descriptive booklet.

50-lb. box	per lb., \$0.17
100-lb. keg .....	.16
Half barrel .....	.15
Barrel of about 400 lbs.....	.14

DIXON'S GRAPHITE GREASE, No. 8815

This grease possesses an unusual degree of resistance to heat, although at normal temperatures, it feeds nicely through compression cups.

It is particularly valuable for lubricating engine valve gears and bearings subjected to external heat, and has also shown excellent service on flour mill, paper mill, and rolling mill machinery.

10 lbs. ..each,	\$1.50	100 lbs. ..each,	\$12.00
25 lbs. .. "	3.50	400 lbs. .per lb.,	.10
50 lbs. .. "	6.50		

DIXON'S GRAPHITE PIPE JOINT COMPOUND

Dixon's Graphite Pipe Joint Compound is not a cement which hardens, but rather a true lubricant for the thread of pipes, bolts, nuts, turn-buckles, etc., making them easy to screw up and allowing them to be taken apart without damage or trouble. Also valuable on flanges, gaskets, boiler tube caps, gas retort doors, etc.

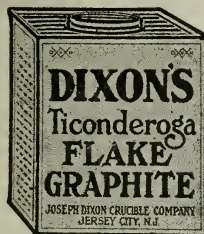
Joints made up with this material can never rust, corrode, or stick, but may always be separated without difficulty after any length of time. Dixon's Graphite Pipe Joint Compound is very much superior to red or white lead and is 3 1/2 times as bulky.

Trade Nos.

693.	1-lb. tin can (36 in case)	per lb., \$0.25
694.	5-lb. tin can (12 in case)	" .22
695.	10-lb. tin can (6 in case)	" .19
696.	25-lb. tin can	" .18
697.	50-lb. keg	" .17 1/2
698.	100-lb. keg	" .17
699	Barrels, about 625 lbs.....	" .16 1/2

DIXON'S GRAPHITE LUBRICANTS

DIXON'S TICONDEROGA FLAKE GRAPHITE



Dixon's Flake Graphite has many valuable applications as a lubricant for cylinders, valves and bearings, either alone or mixed with oils and greases. It is also nearly indispensable to engineers and mechanics for coating gaskets and packing, for pipe-fittings, etc.

Dixon's Ticonderoga Flake Graphite is prepared in the coarser (or No. 1) flake, and the finer (or No. 2) size. Users of Dixon's Graphite will do well to keep both kinds on hand, as each has special advantages. If the finely ground (No. 2) Graphite is desired, so specify it in the order. Prices the same for Nos. 1 and 2.

Trade Nos.		Per Case	Per Pkg.
632.	1-lb. paper can. (36 in case).....	\$12.00	\$0.40
633.	5-lb. tin can. (10 in case).....	16.00	1.75
634.	10-lb. tin can. (5 in case).....	15.50	3.25
644.	25-lb. box		7.50
645.	50-lb. box	14.00	
		Per Lb.	
646.	100-lb. keg .....		.28
646½.	200-lb. keg .....		.27½
647.	400-lb. barrel .....		.27

DIXON'S SOLID BELT DRESSING

Put up in bars weighing about one lb. of convenient shape and size. Applied to belts while in motion, stops all slipping instantly.

Increases efficiency of belts that are too narrow for the load.

Superior to resin, tar and vegetable or animal oils. Equally satisfactory for leather, rubber, canvas or fabric belting.

1-lb. bars in case.....	each, \$0.35
Case of 25 bars	7.50

DIXON'S WATERPROOF GRAPHITE GREASE

In all respects a high-grade lubricant for loose open bearings, gears, slides, etc. It possesses great adhesiveness and tenacity, and will not be thrown from gears, chains, wire ropes, sprocket chains and the like, traveling at a high speed.

Dixon's Waterproof Graphite Grease contains no soluble ingredients and cannot be washed off by fresh or salt water, by acid or alkaline water.

These properties highly commend its use upon wire ropes and chains, gears, cranes, derricks, dredges, steam shovels, pile drivers, winches, hoisting engines, quarrying and mining machinery, elevator plungers, fire hydrants, and every sort of machinery exposed to water or the weather.

5-lb. tin can (10 in case).....	per lb., \$0.18
10-lb. firkin (6 in case).....	" .15
25-lb. firkin	" .14
50-lb. keg	" .13
100-lb. keg	" .12
Half barrel	" .11
Barrel of about 400 lbs.....	" .10

DIXON'S GRAPHITE No. 635

This is a special grade of Dixon's Pure Flake Graphite, selected with great care and ground to an impalpable degree of fineness. No. 635 is largely used upon locomotive mechanisms, type-setting machinery, light, close-fitting bearings, spindles, bobbins and other delicate parts of textile machinery, stationary gas engines, cyclometers, scientific instruments, firearms, talking machines, etc.

For certain purposes it is thoroughly ground with just enough sperm oil to make it more adhesive. If this style is wanted simply specify No. 635 "oiled" in the order.

1-lb. tin can (36 in case).....	per lb., \$0.75
5-lb. tin can (10 in case).....	" .65
10-lb. tin can (5 in case).....	" .65
25-lb. box	" .60
50-lb. box	" .60
100-lb. keg and larger	" .60

DIXON'S GRAPHITE AUTOMOBILE LUBRICANTS

GRAPHITE TRANSMISSION AND DIFFERENTIAL GREASE No. 677



A graphited grease of just the right consistency for all transmission and differential gears, except those intended to be lubricated with light oil. It is the grease the "Speed Kings" use. There is nothing like it on the market. We stand behind this grease with our strongest recommendation.

1-lb. tin cans (36 in case).....	per lb., \$0.35
5-lb. tin pails (10 in case).....	..... .30
10-lb. tin pails (6 in case).....	..... .25

Larger Sizes if Desired.

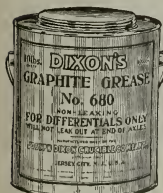
GRAPHITE GEAR OIL No. 675



A very light bodied gear lubricant for use in transmission and differential cases designed for light oil lubrication. Generally speaking, No. 675 should be used only in cases fitted with plain bearings.

5-lb. tin pails (10 in case).....	per lb., \$0.30
10-lb. tin pails (6 in case).....	..... .25

GRAPHITE NON-LEAK GREASE No. 680



Many differentials permit the lubricant to work out on the brakes and wheels. No. 680 will cure this trouble for it does not work out of the housing. Try it if your rear axle leaks. This special grease should be used only when No. 677 or No. 675 will not stay in the differential; it is not intended for transmissions.

5-lb. tin pails (10 in case).....	per lb., \$0.30
10-lb. tin pails (6 in case).....	..... .25

Larger Sizes if Desired.

GRAPHITOLEO



Pack wheel spindles and steering gear housings with Graphitoleo. Absolutely warranted not to gum or become rancid. The collapsible tubes are very convenient for automobile use.

8-oz. tubes (36 in case).....	per doz., \$5.00
1-lb. tin cans (36 in case).....	per lb., .55
5-lb. tin pails (10 in case).....	..... .50

GRAPHITE CUP GREASES



Cup greases containing fine flake graphite, reduce friction to a minimum. Use Dixon's No. 3, except in hot climates where No. 5 is better. For all grease cups, wheel spindles, etc. By using these high grade graphite greases the bearings soon acquire the well-known graphite polish that eliminates friction and causes easy running.

1-lb. tin cans (36 in case).....	per lb., \$0.35
5-lb. tin pails (10 in case).....	..... .30
10-lb. tin pails (6 in case).....	..... .25

Larger Sizes if Desired.

GRAPHITE HEAT-RESISTING GREASE No. 676



No. 676 is the best grease we know of for universal joints, water pump cups, overhead valve cups and clutch thrust collars. It positively will not melt and run out. This grease should not be used on gears.

1-lb. tin cans (36 in case).....	per lb., \$0.35
5-lb. tin pails (10 in case).....	..... .30

MOTOR GRAPHITE

The purest and most carefully selected grade of flake graphite, ground to impalpable fineness. May be mixed with oil or grease as required. Its function is to eliminate friction and wear of parts and to increase power. Use it in cylinders, on chains, springs, tires, wheel rims, bearings and wherever friction occurs.

½-lb. tin cans (36 in case).....	per can, \$0.50
8-lb. tin cans (1 in case).....	..... 4.00



GRAPHITE MOTOR CHAIN COMPOUND



Without an equal for lubricating automobile driving chains. When chain is cleaned and immersed in the melted compound, no other external or internal applications are necessary. The compound may be used repeatedly. Prevents rust and wear. Put up in cakes of about 3 lbs. each.

20 cakes per case.....	per cake, \$1.00
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Cordage and Twines

FOR seventy-seven years rope and twine have been big staples in our business. We have specialized on these goods, as have few other merchants in this country. We have studied the industry long and carefully. We have backed our judgment and we have been successful, and the one big reason for our success is the simple fact that *we know the right rope or twine for your particular use*, and what is more, we carry it in stock.

There are many factors in this seemingly simple question, but they all boil down to *strength, usability, durability and price*, and the proper balance of these four factors applied to the varied needs of our customers is what our experts are working on all the time.

It is right here that the *big value of our service* comes in by offering you the best rope or twine for your purpose. All you have to do is to tell us the use to which the material is to be put, and we can supply you the right cordage at the right price.

No concern in the United States carries a more diverse and comprehensive stock of cordage and twines than we do. No concern carries a larger stock or does a larger business, or tries harder to give its customers intelligent service, fair prices and a square deal.

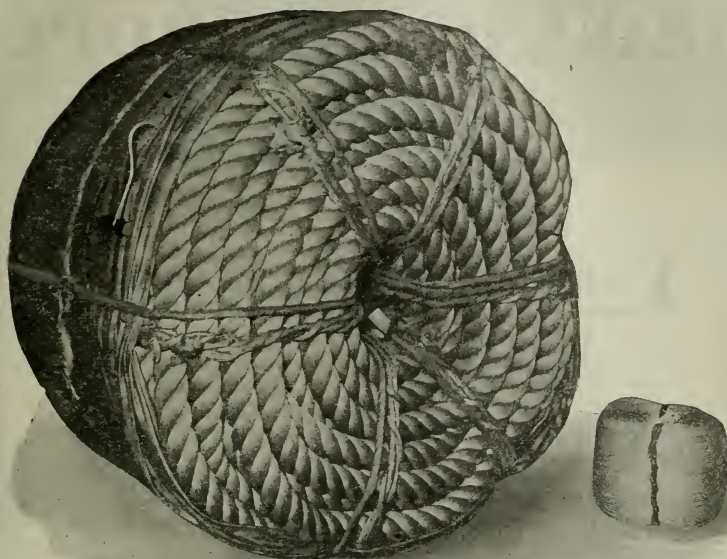
We therefore urge you to put your cordage problems up to us and let us help you determine what material, grade and quality best fills your particular needs.

GEO. B. CARPENTER & CO.



An eighteen inch circumference "Old Colony" switch-rope—made by our own riggers—
breaking strain, 200,000 pounds.

CORDAGE



1,200 feet 9-thread Manila Rope	-	40 pounds
1,200 " 10 cir.	" " "	4,000 "

We carry in our Chicago Warehouses over ONE MILLION POUNDS of Manila and Sisal Rope, in the Following Grades:

Old Colony Hoisting	Old Colony Transmission
<u>G. B. C. & Co. Best Pure Manila</u>	
Standard Manila, "H" Manila,	
Pure Sisal, Complex Sisal	

Lath yarn, Hide Rope, Hay Rope and Baling Twine



Old Colony TRANSMISSION ROPE

STANDS FOR

**Durability
Service**

**Economy
Safety**

IN the selection of a rope for the transmission of power, Quality and Reputation are the main points which should receive attention.

The question of price is relatively unimportant as a saving in first cost often turns into an added expense and risk in the long run. Don't experiment, but buy a rope with a record.

In the manufacture of Old Colony Transmission Rope the question of price is not considered, our purpose at all times being to better its quality rather than decrease its cost, and after a continuous and successful history of nearly thirty years—during which time we have supplied Old Colony to a constantly increasing list of important power plants—we offer Old Colony to you as the best rope money can buy.

We carry Old Colony Transmission Rope in Chicago stock in 3 and 4 strand, $\frac{3}{8}$ to $1\frac{5}{8}$ inches diameter in 3000 foot coils, and $1\frac{3}{4}$ to $2\frac{1}{4}$ inches diameter in 2000 foot coils. Cut lengths also.

SPLICING

To insure perfect service your ropes must be perfectly spliced. We send men to any part of the country to do this work when necessary.

PRICE

Old Colony Transmission Rope is sold by the pound and fluctuates with the price of the best marks of Manila Hemp. Estimates and quotations furnished on request.

Old Colony Rope can be identified by a green marker yarn which appears on the surface.



Bale of Manila Hemp



Trade Mark



**TABLE OF WEIGHTS AND PULLEY DIAMETERS TO BE USED
IN CONNECTION WITH OLD COLONY ROPE**

Size of Rope, inches	Approx. Wt. of 4-Strand per 100 Feet, lbs.	Proper Diameter Pulley inches
$\frac{3}{8}$	5	18
$\frac{1}{2}$	$9\frac{1}{2}$	22
$\frac{5}{8}$	16	24
$\frac{3}{4}$	20	30
$\frac{7}{8}$	30	36
1	35	42
$1\frac{1}{8}$	42	48
$1\frac{1}{4}$	50	54
$1\frac{3}{8}$	65	67
$1\frac{1}{2}$	75	60
$1\frac{3}{4}$	110	72
2	130	84

Above weight is for Four-Strand Rope. Three-Strand Rope will weigh approximately 5% less.

TABLE HORSE-POWER TRANSMITTED BY ROPE

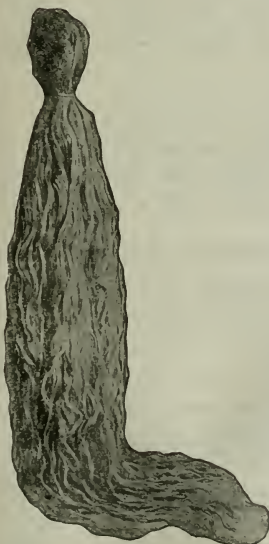
In determining the Horse-Power which a rope will transmit, the problem embraces coefficient of friction, difference in tension, influence of centrifugal force, and many questions of weight, strength and velocity.

In the following table, taken from Flather's treatise on "Rope Driving," the stress on the rope is the same at all speeds (200 lbs. working strain), due allowance having been made for all of the above factors.

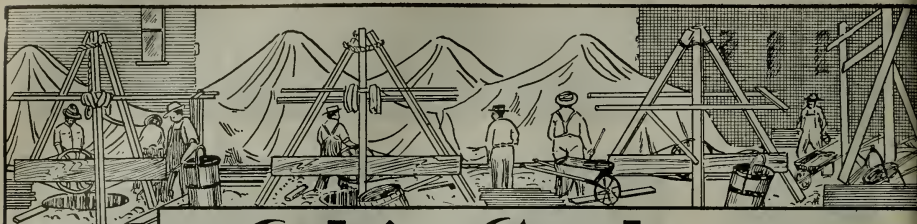
Velocity of Rope in Feet per Minute	Diameter of Rope, inches						
	$\frac{3}{8}$	$\frac{1}{2}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2
1,000	1.24	2.25	3.57	5.59	8.02	10.85	14.20
2,000	2.70	3.84	6.84	10.68	15.39	23.93	37.36
3,000	3.30	4.71	8.38	13.10	18.86	25.66	33.54
3,500	3.83	5.46	9.80	15.39	21.87	29.74	38.88
4,000	4.30	6.23	11.09	17.33	24.94	34.03	44.35
4,500	4.74	6.83	12.15	18.98	27.33	37.17	48.59
5,000	5.01	7.24	12.89	20.15	29.00	39.45	51.57
5,500	5.20	7.47	13.29	20.76	29.89	40.65	53.15
6,000	5.29	7.60	13.53	21.14	30.43	41.39	54.11
6,500	5.08	7.32	13.10	20.36	29.32	39.77	52.12
7,000	4.74	6.83	12.18	19.00	27.34	37.21	48.63
7,500	4.12	5.93	10.54	16.47	23.72	32.26	42.18
8,000	3.25	4.67	8.32	13.00	18.73	25.42	33.23

SCIENTIFIC INFORMATION

Any of our customers who wish to consult the best authority on the many scientific and mechanical problems which Rope Driving presents, should obtain the splendid treatise entitled "Rope Driving," by Prof. John J. Flather, Ph. B., M. M. E. This treatise can be had for \$2.00, or in case you do not care to purchase, we shall be pleased to loan you a copy for consultation, to be returned at your convenience.



Hank of Manila Hemp



Old Colony

CAISSON ROPE

A PERFECT hawser laid rope made especially for this purpose from selected long fibre Manila hemp.

Because of the element of danger to life in all Caisson work, no superintendent should knowingly use any but the very best rope on the job.

“Old Colony” Caisson Rope has exceeded all claims made for it. Hard competitive tests have proven that there is no better rope for this purpose, that there is no rope more safe, or more economical in the long run.

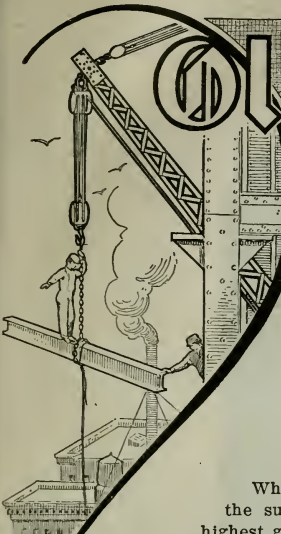
Contractors who **know** will use no other.

Size generally used is 1 1-8 inch diameter. We have it in 1200 foot coils, weighing approximately 525 lbs.

Per Pound.....Cts.

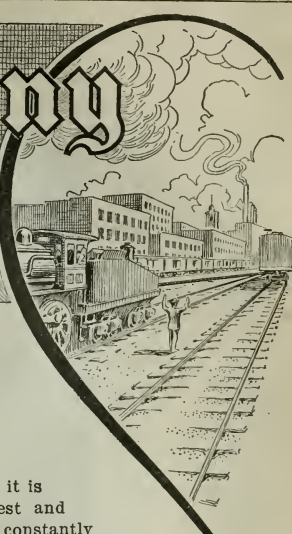
Any size and length cut to order at a slight advance over coil price to cover wastage.





Old Colony

HOISTING ROPE



RESPONSIBILITY

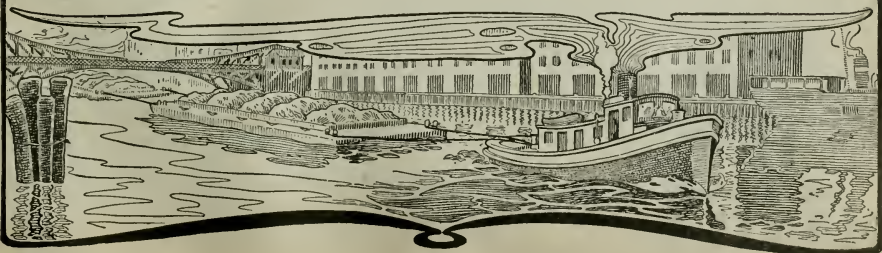
Where life and property are at stake, it is the surest economy to use only the best and highest grade rope obtainable. There is a constantly growing demand for Manila cordage of better-than-usual quality for switching, hoisting and towing purposes, and in "Old Colony" Hoisting Rope we offer a product that will meet all requirements.

It is made of specially selected long fibre Manila Hemp, and manufactured under the closest supervision of experienced ropemakers. It is the constant aim to produce a rope for heavy duty that will insure the safety of the people handling it, as well as the apparatus of which it will later become an important working part.

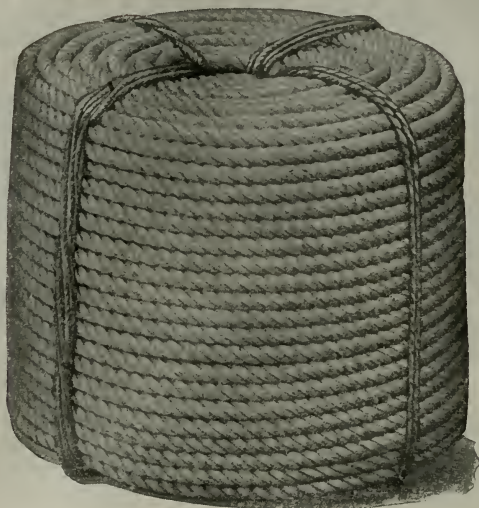
We recommend "Old Colony" Hoisting Rope as the best rope the market affords. Carried in Chicago stock in 3 and 4 strand, $\frac{3}{8}$ to 4 inches in diameter, in 1,200 foot coils.

Approximate Table of Weights

3 Strand																
Size ....Diameter	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$	1 $\frac{7}{8}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	3	
Per 100 feet, lbs...	5 $\frac{1}{4}$	7 $\frac{3}{4}$	15 $\frac{3}{4}$	17	26	34	42	51	68	81	95	125	155	184	272	



MANILA ROPE



All Coils of Our Manila Rope are stenciled as shown below.

G.B.C. & Co.
BEST
PURE
MANILA

G. B. C. & CO. BEST PURE MANILA ROPE

Our stock includes in 1,200 ft. coils $\frac{3}{8}$ to 5 inch diameter, in half coils $\frac{1}{2}$ to 2 inch diameter. Coils. per lb. \$.....

Cut Lengths "

STANDARD MANILA ROPE

Our stock includes $\frac{3}{8}$ to $1\frac{1}{2}$ inch diameter in 1,200 ft. coils and half coils. We do not cut coils. per lb. \$.....



MANILA

H
MANILA

"H" MANILA

Our stock includes $\frac{3}{8}$ to $1\frac{1}{4}$ inch diameter in 1,200 ft. coils and half coils. We do not cut coils. per lb. \$.....

APPROXIMATE WEIGHT AND STRENGTH G. B. C. & CO. BEST PURE MANILA ROPE

Manila, Sisal, and Jute Ropes weigh (about) alike.
Tarred Hemp Cordage will weigh (about) one-fourth more.

Diameter inches	Circumference in inches	Number of feet in 1 lb.	Coils		Strength of New Manila Rope, lbs.	Diameter inches
			Length, feet	Weight, lbs.		
$\frac{3}{8}$	6 thd. fine	85 ft.	3,000	33	500	$\frac{3}{8}$
$\frac{1}{2}$	6 "	50 "	2,800	55	620	$\frac{1}{2}$
$\frac{5}{8}$	9 "	40 "	2,200	55	1,000	$\frac{5}{8}$
$\frac{3}{4}$	12 "	27 "	1,750	65	1,275	$\frac{3}{4}$
$\frac{7}{8}$	1 1/4	20 "	1,500	75	1,875	$\frac{7}{8}$
1	1 1/2	13.5 "	1,200	90	2,400	1
1 1/8	1 3/4	9.6 "	1,200	125	3,300	1 1/8
1 1/4	2	7.7 "	1,200	155	4,000	1 1/4
1 3/8	2 1/4	6.3 "	1,200	190	4,700	1 3/8
1 1/2	2 1/2	5.1 "	1,200	235	5,600	1 1/2
1 3/4	2 3/4	4.4 "	1,200	270	6,500	1 3/4
1 7/8	3	3.7 "	1,200	325	7,500	1 7/8
2	3 1/4	2.7 "	1,200	380	8,900	2
2 1/8	3 1/2	2.7 "	1,200	435	10,500	2 1/8
2 1/4	3 3/4	2.3 "	1,200	505	12,500	2 1/4
2 3/8	4 1/4	1.88 "	1,200	640	14,000	2 3/8
2 1/2	4 1/2	1.68 "	1,200	715	17,000	2 1/2
2 5/8	5	1.35 "	1,200	885	20,000	2 5/8
2 3/4	5 1/2	1.12 "	1,200	1,065	25,000	2 3/4
3	6	.94 "	1,200	1,275	30,000	3
3 1/8	6 1/2	.80 "	1,200	1,500	33,000	3 1/8
3 1/4	7	.68 "	1,200	1,745	37,000	3 1/4
3 3/8	7 1/2	.60 "	1,200	2,000	43,000	3 3/8
3 1/2	8	.52 "	1,200	2,280	50,000	3 1/2
3 3/4	8 1/2	.46 "	1,200	2,570	56,000	3 3/4
4	9	.37 "	1,200	2,885	62,000	4
4 1/8	9 1/2	.33 "	1,200	3,205	68,000	4 1/8
4 1/4	10	.29 "	1,200	3,580	75,000	4 1/4

The relative strength of Manila to Sisal is about as 7 is to 5.

G. B. C. & CO. MANILA

Rope, 2 inch circumference ($\frac{5}{8}$ in. dia.) and larger, tarred or untarred.....	Basis price
$\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ dia.....	$\frac{1}{2}$ c above Basis
12 thread, ($\frac{5}{8}$ in. dia.) and 15 thread fine, tarred or untarred.....	1c " "
6 and 9 thread ($\frac{1}{4}$ and $\frac{5}{8}$ in. dia.), tarred or untarred.....	1 1/2c " "
6 thread fine ($\frac{3}{8}$ in. dia.), tarred or untarred.....	2c " "
Net Rope, 15 thd. and larger, tarred or untarred.....	$\frac{1}{2}$ c " "
Net Rope, 12 thd., tarred or untarred.....	1 1/2c " "
Net Rope, 6 and 9 thd., tarred or untarred.....	Special price
Cables (Oil well drilling and sand lines).....	3c above Basis
Bolt Rope, Points, Best Coal Falls, Steamship Wheel Ropes and Mill Carriage Ropes, fine or selected yarn, Whale line.....	Special price
Old Colony Transmission Rope, selected stock.....	$\frac{1}{2}$ c above Basis
Hay Rope, Hide Rope, Fish Twine, Spun yarn and Bale Rope, coarse and medium.....	1c " "
Hay Rope, Hide Rope, Fish Twine, Spun yarn and Bale Rope, fine.....	1 1/2c " "
Hay Rope, Hide Rope and Fish Twine, laid.....	5c " "
Hay Rope, Hide Rope and Fish Twine, fine laid.....	4c " "
Manila Lariat Rope, 4 strand.....	Special price
Manila Lariat Rope, 3 strand.....	" "
Special Yacht Rope and Yacht Lariat, 3 or 4 strand.....	" "
Tom Horn Lariat.....	" "
Bronco Bob Lariat.....	" "

G. B. C. & CO. SISAL LATHYARN

110 and 130 Best Tarred Lath yarn.....	} On Application
110 and 130 Anchor Tarred Lath yarn.....	
130 and XLGR Tarred Lath yarn.....	
Untarred Sisal Lath yarn same price as Sisal Rope.....	
200 thread.....	$\frac{1}{2}$ c advance

G. B. C. & CO. SISAL

Rope, 2 inch circumference ($\frac{5}{8}$ in. dia.) and larger.....	Basis price
$\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ dia.....	$\frac{1}{2}$ c above Basis
12 thread ($\frac{5}{8}$ in. dia.).....	1c " "
6 and 9 thread ($\frac{1}{4}$ and $\frac{5}{8}$ in. dia.).....	1 1/2c " "
3 thread laid ($\frac{3}{8}$ in. dia.).....	2c " "
Hay Rope, Hide Rope, Fish Twine, Spun yarn and Bale Rope, coarse and medium.....	$\frac{1}{2}$ c " "
Hay Rope, Hide Rope, Fish Twine, Spun yarn and Bale Rope, fine.....	1c " "
Hay Rope, Hide Rope and Fish Twine, laid.....	1c " "
Hay Rope, Hide Rope and Fish Twine, fine laid.....	1 1/2c " "
Sisal Lariat Rope, 4 strand.....	5c " "
Sisal Lariat Rope, 3 strand.....	4c " "
130 Thread Untarred Lath or Ring yarn.....	Basis price
200 thread.....	$\frac{1}{2}$ c advance

All Goods are Sold at Gross Weight.

All Goods in Balls $\frac{1}{2}$ c per pound extra.

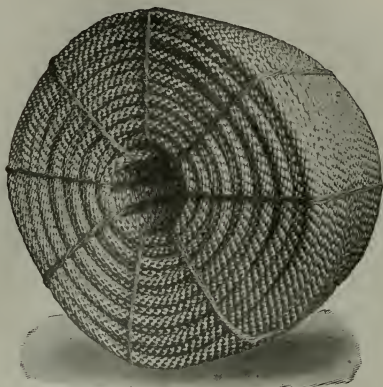
All Rope when ordered without Oil, 1c per pound extra.

All 4 strand Rope, 1c extra.

HAWSER LAID MANILA ROPE

OR

WELL DRILLING CABLE



We carry in Chicago stock all sizes $\frac{5}{8}$ to 2 inch diameter in 1,200 foot coils. The $\frac{5}{8}$ and $\frac{3}{4}$ inch diameter is used for Governor ropes on passenger and freight elevators. The $1\frac{1}{8}$ inch diameter is used extensively by Chicago contractors for hoisting buckets in caisson construction.

Full coils per lb. \$..... Cut lengths per lb. \$.....

TALLOW LAID MANILA ROPE



Cross Section of
3 Strand Rope

This Rope is used for general hoisting and carriage movement in saw-mills. We carry it in stock in sizes $\frac{3}{8}$ inch to $2\frac{1}{4}$ inch diameter, in both 3 and 4 strand, in coils 1,200 feet long. Longer lengths to order.

$\frac{3}{8}$ inch diameter	3 Strand 4 Strand	per lb. \$.... \$....
$\frac{7}{16}$ and $\frac{1}{2}$ inch diameter.....	"	"
$\frac{5}{8}$ inch and larger.....	"	"



Cross Section of
4 Strand Rope

STEAM-TARRED MANILA ROPE

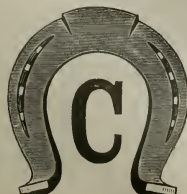
Right and Left Laid, and Stretched, for Seine and Net Hanging

6 and 9 thread	per lb. \$....
12 thread	"
15 thread and larger	"

STEAM-TARRED SISAL ROPE

Right and Left Laid, and Stretched, for Seine and Net Hanging

6 and 9 thread	per lb. \$....
12 thread	"
15 thread and larger	"



OUR

BRAND

GOOD LUCK

BINDER TWINE

In 50 lb. Bales, 5 lb. Balls

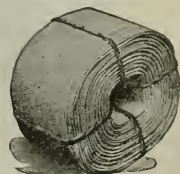
Pure Manila, 650 feet to lb.....	per lb. \$....
Manila, 600 feet to lb.....	"
Standard, 500 feet to lb.....	"
Sisal, 500 feet to lb.....	"

Our Twine runs very even and is free from the bunches and irregular spots so common in ordinary Binder Twine.

SISAL ROPE

We carry in Chicago stock, all sizes, $\frac{1}{8}$ to $1\frac{1}{2}$ inch diameter in coils and $\frac{1}{2}$ to $1\frac{1}{2}$ inch diameter in half coils.

	Pure	Complex
$\frac{1}{8}$ inch diameter	per lb. \$....	\$....
$\frac{1}{4}$ inch and $\frac{1}{8}$ inch diameter .....	"	.....
$\frac{3}{8}$ inch diameter .....	"	.....
$\frac{1}{2}$, $\frac{1}{2}$ and $\frac{1}{8}$ inch diameter .....	"	.....
$\frac{5}{8}$ inch diameter and larger .....	"	.....



SISAL HIDE ROPE

In Strand (twisted)

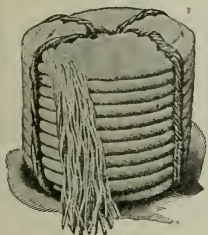
We carry in Chicago stock, all sizes, coils about 100 lbs. in pure Sisal and Complex.

PURE SISAL

2 and 3 ply, Regular, coils	per lb. \$....
2 and 3 ply, Medium, coils	"
2 and 3 ply, Fine, coils	"
2 ply, Extra Fine, coils	"

COMPLEX

2 and 3 ply, Regular, coils	per lb. \$....
2 and 3 ply, Medium, coils	"
2 and 3 ply, Fine, coils	"
2 ply, Extra Fine, coils	"



SISAL HAY ROPE

Or Baling Rope (twisted)

We carry in Chicago stock, Pure Sisal and Complex in coils and reels, about 55 lbs. and 5 lb. balls in 100 lb. bales.

PURE SISAL

2 and 3 ply, Medium, coils or reels	per lb. \$....
2 and 3 ply, Fine	"
4, 5, and 6 ply, Regular	"

COMPLEX

2 and 3 ply, Medium, coils or reels	per lb. \$....
2 and 3 ply, Fine, coils or reels	"
4, 5, and 6 ply, Regular, coils or reels	"

All Uncoiled Sisal, 1c per lb. extra. Baling, $\frac{1}{4}$ c extra.



LATH YARN

Tarred

We carry in Chicago stock all brands in 100, 200 and 500 lb. Coils. Our assortment is suited for all uses, carrying three grades, viz:



G. B. C. & CO.'S BEST
Evenly Spun, Lightly Tarred

110 yarns in the strand.....	per lb. \$....
130 yarns in the strand.....	"
200 yarns in the strand.....	"



ANCHOR BRAND

110 yarns in the strand.....	per lb. \$....
130 yarns in the strand.....	"
200 yarns in the strand.....	"



No 130

X L C R
130

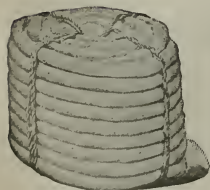
X L C R BRAND

110 yarns in the strand.....	per lb. \$....
130 yarns in the strand.....	"
200 yarns in the strand.....	"

RING YARN

Untarred Lath Yarn

We carry in Chicago stock Pure Sisal and Complex in 100 lb. Coils; on Reels, Single End and 5 lb. Balls in 100 lb. Bales.



PURE SISAL

110 yarns in the strand....	per lb. \$....
130 yarns in the strand....	"
200 yarns in the strand....	"

G.B.C. & CO.

PURE
SISAL



SISAL

COMPLEX

110 yarns in the strand.....	per lb. \$....
130 yarns in the strand.....	"
200 yarns in the strand.....	"

COTTON ROPE



Fig. 401. Coil



Fig. 402. Tube



Fig. 403. Reel

We carry Chicago stock in Cotton Rope, Old Colony $\frac{3}{16}$, $\frac{1}{4}$ and $\frac{5}{16}$ inch diameter in Tubes and Reels "A A," $\frac{1}{4}$ to $\frac{1}{2}$ inch diameter on Reels and $\frac{5}{16}$ to $1\frac{1}{4}$ inch diameter in Coils.

OLD COLONY

	Reels	Tubes		"A A"	Reels	Coils
$\frac{3}{16}$ inch diameter.....	per lb. \$.....	\$.....	$\frac{1}{4}$ to $1\frac{1}{4}$ inch dia.....	per lb \$.....	\$.....	
$\frac{1}{4}$ and $\frac{5}{16}$ inch dia...	"	.....			
$\frac{5}{16}$ to $1\frac{1}{4}$ inch dia.						\$.....

For estimate of weights of Cotton Rope, see index.

JUTE ROPE

$\frac{1}{8}$ to $\frac{3}{4}$ Inch Diameter, in Coils about 100 lbs.

$\frac{1}{8}$ inch diameter.....	per lb. \$.....	$\frac{1}{4}$ to $\frac{3}{4}$ inch diameter.....	per lb. \$.....
----------------------------------	-----------------	---	-----------------

TARRED CORDAGE

American Hemp, 2 in. cir. and less	per lb. \$.....	Ratline, 6, 9, 12, 15, 18 and 24 thread	per lb. \$.....
American Hemp, Larger to 4 in. cir.	"	Regular Houseline, 5 and 10 lb. Balls	"
Russia Bolt Rope, 6thd to $3\frac{1}{2}$ cir.	"	Houseline, 1 and 20 lb. Balls	"
Regular Marline, 1, 5, 10 and 25 lb. Balls and Coils.....	"	Hambroline, 5 and 10 lb. Balls.	"
Yacht Marline, 1 lb. Balls.....	"	Rounding, 5 and 10 lb. Balls..	"
Marline, 1 and 20 lb. Balls.	"	Spun Yarn, 5 and 10 lb. Balls...	"



Fig. 404

HEMP PACKINGS

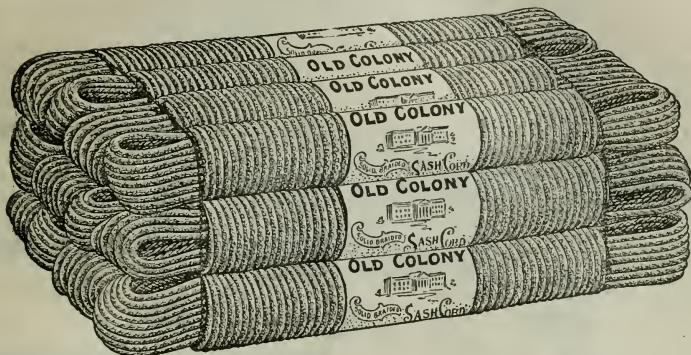
Italian A, 25, 50 and 100 lb. coils.....	per lb. \$.....
Italian B, 25, 50 and 100 lb. coils.....	"
American A, 50 and 100 lb. coils.....	"
American B, 50 and 100 lb. coils.....	"
Jute, 100 lb. coils.....	"
Jute, Tarred, 100 lb. coils.....	"

CABLE LAID HEMP BELL CORDS

$\frac{1}{4}$ and $\frac{5}{16}$ Inch Diameter, in Coils about 1,800 Feet Long

Italian	per lb. \$.....
American	"
India	"

BRAIDED COTTON SASH CORDS



Put up in hanks of 100 feet each, two connected, one dozen hanks (1,200 feet) in a package; 6 dozen Nos. 6 to 9 inclusive, and 4 dozen Nos. 10 and 12 in a bale; or in coils of 1,200 feet.

We are selling agents for the Anniston Cordage Co., and are in the best possible position to take care of the trade in these goods.

No.	Diameter	Weight per doz. Hanks	Length per lb.	Suitable for Weights	Minimum Diam. of Pulley allowable
6	$\frac{1}{8}$ inch	17 lbs.	70 feet	Less than 5 lbs.	$1\frac{1}{2}$ inch
7	$\frac{7}{32}$ inch	22 lbs.	55 feet	5 to 15 lbs.	$1\frac{3}{4}$ inch
8	$\frac{1}{4}$ inch	26 lbs.	46 feet	15 to 25 lbs.	2 inch
9	$\frac{3}{8}$ inch	32 lbs.	37 feet	25 to 35 lbs.	$2\frac{1}{4}$ inch
10	$\frac{1}{2}$ inch	40 lbs.	30 feet	35 to 45 lbs.	$2\frac{1}{2}$ inch
12	$\frac{5}{8}$ inch	58 lbs.	21 feet	45 to 60 lbs.	3 inch

LIST OF BRAIDED COTTON SASH CORD

Brand	No. 6		No. 7		Nos. 8 to 12	
	White	Drab	White	Drab	White	Drab
Old Colony per lb.
Anniston "
Samson Spot "
Phoenix "
Silver Lake A. "
Silver Lake B. "
Rainbow "

BRAIDED COTTON BELL CORDS

In coils any length desired. Coils in stock about 1,000 feet.

Nos.	6	7	8	9	10
Inches, diameter	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{4}$	$\frac{3}{16}$	$\frac{1}{2}$

White Drab Mahog'y

Old Colony brand

"A" per lb. \$.....

Anniston brand "

Samson brand "

SOLID BRAIDED ROPE

In coils 1,200 feet



No.	Diameter	Wt. per 100 Ft.
14	$\frac{1}{4}$ inch	7 lbs.
16	$\frac{1}{2}$ inch	9 lbs.
18	$\frac{3}{8}$ inch	11 lbs.
20	$\frac{1}{2}$ inch	13 lbs.
24	$\frac{3}{4}$ inch	17 lbs.
28	$\frac{7}{8}$ inch	22 lbs.
32	1 inch	28 lbs.
36	1 $\frac{1}{8}$ inch	35 lbs.

White Cotton per lb. \$.....

Drab Cotton "

Italian "

Linen "

TROLLEY AND ARC LIGHT CORD

Waterproofed Braided Cotton

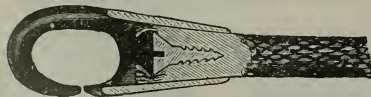
In coils about 1,000 feet long or any length desired.

No. 12 ($\frac{3}{8}$ inch diameter) is commonly used for Arc Light.

No. 8 ($\frac{1}{4}$ inch diameter) and No. 9 ($\frac{3}{16}$ inch diameter) are usually used for Trolleys.

"A" Quality Trolley Cord..... per lb. \$.....

"Arc" Light Cord "

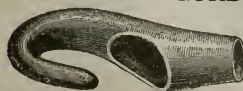
BELL CORD COUPLINGS

Put up one dozen in a box complete, with screws to match.

Japanned, No. 8 and No. 9. per doz. \$0.60

Japanned, No. 10 and No. 12. " .70

NOTE.—To insert solid braided cord in a coupling, cut the end diagonally and twist it in.

VALVE CORD HOOKS

For use with air brake and air signal systems. With socket for firmly holding

the cord. Furnished in brass, in size for No. 6 or No. 7 cord complete, with screws.

Price per doz. \$1.00

SMALL BRAIDED LINES

Nos. 3 $\frac{1}{2}$, 4 and 4 $\frac{1}{2}$, put up in hanks of 48 feet each (several connected in one length), one dozen hanks (192 yards) in a box, or in coils of 1,000 yards.

The white cotton lines are bleached.

The white and drab cotton lines are glazed. Other colors are unglazed.

Sage, terra cotta, green, old gold, maroon, olive, Spanish olive, blue, scarlet, brown, cardinal, ecru, and pearl are kept in stock at factory, in No. 4 size, and furnished to order in the other sizes.



No. 3 $\frac{1}{2}$ In Hanks In Coils
per doz. per 100 yds.

Cotton, white
Cotton, bleached or colored.....
Linen



No. 4 In Hanks In Coils
per doz. per 100 yds.

Cotton, white
Cotton, bleached or colored.....
Linen



No. 4 $\frac{1}{2}$ In Hanks In Coils
per doz. per 100 yds.

Cotton, white
Cotton, bleached or colored.....
Linen



No. 5

This cord in white or drab cotton and in linen, and put up in hanks of 100 feet each (two lines connected), one dozen in a package, or in coils of 1,000 yards.

In Hanks In Coils
per doz. per yd.

Cotton, white
Cotton, colored
Linen

CHALK LINES

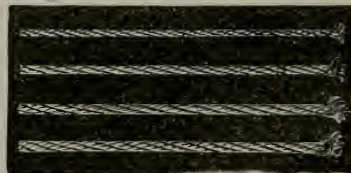
These lines are made of bleached cotton put up in hanks of 20 feet each, one dozen in a bunch, in gross and half gross boxes; or in coils of any length desired.

No. 0

1

2

3



Per gro. lines Per 100 yds.

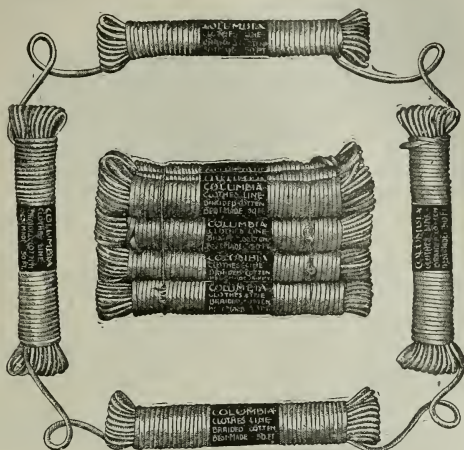
No. 0	\$6.00	\$0.60
No. 1	6.50	.65
No. 2	7.00	.70
No. 3	7.50	.75

GARDEN LINES

Garden Line is made of Italian hemp, solid braided, in size a little smaller than No. 5. Put up in hanks of 100 feet each (two lines connected), one dozen in a package. Per dozen hanks. \$.....

CLOTHES LINES

BRAIDED
AND
TWISTED
COTTON
LINES



MANILA
SISAL
AND
JUTE
LINES

All our Lines are packed in dozen. The dozens are neatly wrapped in paper, and a label showing brand and lengths is placed on each.

Are packed one gross in a bale. The labels are plain but substantial, and give only necessary information as to the Lines contained in package. When a Special Label of any description is required we furnish same free of charge, provided the order is sufficiently large to warrant the additional expense and care.

The higher class of Lines, including all Braided Lines, have a label on each hank. We guarantee our Lines as full length in every case.

We make all Lines with two hanks connected, so that they can be retailed in pairs or single, as occasion demands. Prosecution will follow the use by others of our brands or labels.

Basis, 100 feet.

All Lengths 50 to 100 ft. in proportion.

All Lengths under 50 ft. additional 5%.

COTTON LINES

Anniston Waterproof
Oriole Waterproof
Samson Spot, Solid Braided
Blackbird, Solid Braided
Gilt Edge, Solid Braided
Bee, Solid Braided
Acme, Solid Braided
Empire, Solid Braided

Alabama, Braided Cotton
Albemarle, Braided Cotton
Eclipse, Braided Cotton
Chicago, Braided Cotton
Calhoun, Braided Cotton
Standard, Braided Cotton
Columbia, Braided Cotton
Star Twisted Cotton

HEMP LINES

North Shore
Manila
Luzon
Rajah

X L C R
Minot
Sisal, 6 thread
Sisal, 3 thread

Jute, any length, per lb.
Bull Dog
Samar

TWINES

We carry in our Chicago Warehouses the greatest variety and largest stock of twines in the United States.



FLAX TWINES

SMALL WRAPPING

Assortment in Chicago Stock

$\frac{1}{2}$ lb. balls, 3 lb. package, 144 lb. bale, in all grades and numbers.
 $\frac{3}{4}$ lb. balls, 3 lb. package, 144 lb. bale, in all grades, in Nos. 9, 12 and 18.
 $\frac{1}{2}$ lb. balls, in barrel bags, in all grades and numbers.
 10 reels, in B Italian.
 10, 20 and 40 lb. reels, in BC American.
 10, 20 and 40 lb. reels, in Empress.



Quality	No. 9	No. 12	No. 18	No. 24	No. 36	No. 48	No. 60
"B" Italian per lb.
"B" American "
"BC" American "
Empress "
Banner "



HEMP TWINES

LARGE WRAPPING

Assortment in Chicago Stock. 450 lb. Bales, 50 lb. Reels



B AMERICAN SOAP STONE FINISH

No. 4 $\frac{1}{2}$ in 1 and 10 lb. Balls.
 No. 6 in 1, 5 and 10 lb. Balls.

No. 7 in 1 $\frac{1}{2}$ lb. Balls.
 No. 8 in 2 lb. Balls.
 No. 4 $\frac{1}{2}$, 5, 6, 7 and 8, in 50 lbs. Reels.

BC AMERICAN

No. 4 $\frac{1}{2}$ in $\frac{1}{2}$, 1 and 10 lb. Balls.
 No. 5 and 6 in 1 and 10 lb. Balls.
 No. 4 $\frac{1}{2}$, 5, 6, 7 and 8, in 50 lb. Reels.

No. 7 in 1 $\frac{1}{2}$, 5 and 10 lb. Balls.
 No. 8 in 2 lb. Balls.
 No. 4 $\frac{1}{2}$, 6, 7 and 8, unfinished, in 50 lb. Reels.

INDIA

No. 4 $\frac{1}{2}$ in $\frac{1}{4}$, $\frac{1}{2}$, 1, 3, 5 and 10 lb. Balls.
 No. 5 in 1 and 5 lb. Balls.
 No. 6 in $\frac{1}{2}$, 1, 2, 3, 5 and 10 lb. Balls.
 No. 4 $\frac{1}{2}$, 5, 6, 7 and 8, in 50 lb. Reels.

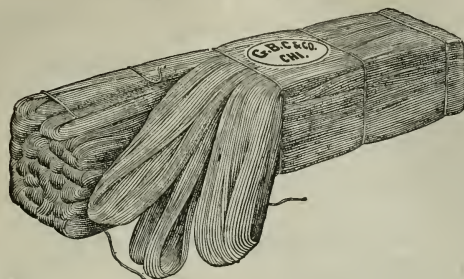
No. 7 in 1 $\frac{1}{2}$, 5 and 10 lb. Balls.
 No. 8 in 2 lb. Balls.
 No. 4 $\frac{1}{2}$, 5 and 6, in 100 lb. Coils, Hide Rope Style.
 No. 4 $\frac{1}{2}$, 6, 7 and 8, unfinished, in 50 lb. Reels.

Quality	Laid, 3 Ply						Twisted, 2 Ply
	5	6	7	8	9	10	4 $\frac{1}{2}$
"B" American Soap Stone Finish per lb.
"BC" American "
India "
Special India "
Luzon Hemp "

AMERICAN HEMP WALL PAPER

10 lb. Balls and 50 lb. Reels in 4, 5, 6, 7 and 8 Ply

BALING OR SEWING TWINES

**JUTE**

144 lb. bales, 12 lb. packages, in skeins.
3, 4, 5 and 6 ply.....per lb. \$....

L. M.

144 lb. bales, 12 lb. packages, in skeins and
150 lb. barrel bags in ½ lb. balls.
3, 4, 5 and 6 ply.....per lb. \$....

C FLAX

144 lb. bales, 12 lb. packages, in skeins.
3, 4, 5 and 6 ply.....per lb. \$....

DIAMOND FLAX

144 lb. bales, 12 lb. packages, in skeins and
150 lb. barrel bags, in ½ lb. balls.
3, 4, 5 and 6 ply.....per lb. \$....

A SAIL—SELECTED FLAX

144 lb. bales, 12 lb. packages, in skeins.
Coils Hide Rope Style.

3 and 4 ply.....per lb. \$....

ACME SAIL—FINE FLAX

144 lb. bales, 12 lb. packages, in skeins.
3 and 4 ply.....per lb. \$....

EXCELSIOR SAIL—FINE FLAX

144 lb. bales, 12 lb. packages, in skeins.
3 and 4 ply.....per lb. \$....

SILVER FINISH—EXTRA FLAX

144 lb. bales, 12 lb. packages, in skeins.
Coils Hide Rope Style.
3 and 4 ply.....per lb. \$....

ANDOVER

144 lb. bales, 12 lb. packages, in skeins.
3, 4 and 5 ply.....per lb., \$....

FLAX BALL TWINES**BLOCKING CORD**

In bales, about 200 lbs.

In 1 lb. balls, 6 lb. packages.....Nos.	9	12	16	20	24	28
Per lb.						
In 4 lb. balls, 12 lb. packages.....Nos.	36	48	60			
Per lb.						

GREY CABLE LAID TWINE

168 lb. bale, 3 lb. package, ½ lb. ball.

Nos... 9 12 18 24 36 48
Per lb.

NO. 6 RED FLAX

168 lb. bale, 3 lb. package, ¼ lb. balls.per lb. \$..

LINEN TWINES**VICTOR MACHINE THREAD**

120 lb. case, 6 lb. package, 1 lb. tubes.

Nos..... 16-3 16-4 16-5 16-6
Per lb.....

SHOE THREAD

120 lb. case, 1 lb. box, 2 oz. ball.

No.....10 H. B.
Per lb.....

LINEN FINISH TWINES

Bleached and Hard Finished

NO. 705 WHITE

3 lb. packages, ½ lb. balls and tubes.per lb. \$....

NO. 151 WHITE

6 lb. package, 1 lb. tubes.....per lb. \$....

NO. 206 RED AND WHITE

3 lb. package, ¼ lb. balls.....per lb. \$....

NO. 333 PINK

3 lb. package, ¼ lb. balls.....per lb. \$....

NO. 333 WHITE

3 lb. package, ¼ lb. balls.....per lb. \$....

JUTE TWINES

WRAPPING

$\frac{1}{2}$ lb. Balls in Barrel Bags about 125 lbs.

No. 1 A Quality in 2, 3, 4, 5 and 6 ply.....	per lb. \$.....
No. 2 Quality in 2, 3, 4, 5 and 6 ply.....	".....

Single End on Reels about 55 lbs.

No. 1 Quality in 2, 3, 4, 5 and 6 ply.....	per lb. \$.....
No. 2 Quality in 2, 3, 4, 5 and 6 ply.....	".....

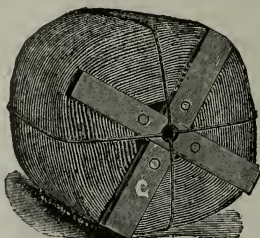
Hide Rope Style, in Coils about 100 lbs.

No. 1 Quality in 2, 3, 4, 5 and 6 ply.....	per lb. \$.....
No. 2 Quality in 2, 3, 4, 5 and 6 ply.....	".....

Baling, in Skeins 12 lb. Pkg. and Bales about 144 lbs.

No. 1 Quality in 2, 3, 4, 5 and 6 ply.....	per lb. \$.....
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TUBE ROPE



No. 1 Quality in 4, 5, 6, 8, 10, 12, 14 and 16 ply; 10 lb. balls in 500 lb. bales; 50 lb. reels and hide rope style in 100 lb. coils.....	per lb. \$.....
4 ply.....	".....
5, 6, 8, 10, 12, 14 and 16 ply.....	".....

WOOL TWINE

No. 1 Quality 3 and 4 ply 1 lb. balls in 125 lb. bales and 50 lb. reels.....	per lb. \$.....
No. 2 Quality 3 and 4 ply 1 lb. balls in 125 lb. bales and 50 lb. reels.....	".....

BUFFALO ROPE

Laid

No. 1 Quality 3 and 4 ply in 10 lb. balls in 500 lb. bales and 50 lb. reels....	per lb. \$.....
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BOX TWINE

No. 1 Quality 2 ply in 1 lb. balls in 100 lb. bales and 50 lb. reels and 100 lb. coils, hide rope style	per lb. \$.....
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SEAMING CORD

No. 1 Quality in 2 lb. balls in 300 lb. bales and 50 lb. reels.....	per lb. \$.....
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WALL PAPER

Laid

No. 1 Quality 3 and 4 ply in 10 lb. balls in 500 lb. bales and 50 lb. reels....	per lb. \$.....
---	-----------------

COTTON TWINES, YARNS AND MOPS

"OLD COLONY"

100 lb. Barrel, 100 lb. Bale

3 and 4 Ply

Balls in barrels.....	per lb. \$.....
Balls, 5 lb. sack, in bales.....	"
Cones in barrels.....	"
Tubes in barrels.....	"

MACHINE COTTON SEWING TWINE

Balls and Tubes

3 ply reverse twist.....	per lb. \$.....
3 ply regular twist.....	"
4 ply regular twist.....	"

COTTON BUTCHERS' TWINE

100 lb. Barrel

4, 6 and 8 ply balls.....	per lb. \$.....
4, 6 and 8 ply cones.....	"

SAIL TWINE

 $\frac{1}{2}$ lb. Balls, 1 lb. Tubes

50 lb. Reels, Single Ends, 50 lb. Tubes, Hide Rope Style

4, 5, 6, 7, 8, 10, 12, 14 ply....	per lb. \$.....
16, 18, 20, 24, 30, 48.....	"

CARPET WARP

100 lb. Bales, 5 lb. Packages in Skeins

4 ply.....	per lb. \$.....
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CARPET WARP OR MOP YARN

For Roofers Use

100 lb. Bales, 5 lb. Packages in Skeins

4 ply.....	per lb. \$.....
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MOPS WITH HANDLES

1 Doz. in Bundle

No. 14 per doz.....	\$6.00
" 16 " "	6.75
" 18 " "	7.25
" 20 " "	8.00
" 24 " "	9.00

MOPS

12 Doz. in Bales, 1 Doz. in Package

Eureka	per lb. \$.....
Dandy, 4 ply.....	"
Star, 4 ply.....	"
Star, 15 ply.....	"
Priscilla	"
Slasher	"
Royal Twine	"
Queen	"

ESTIMATED WEIGHTS OF COTTON ROPE AND SEINE TWINE

Cotton Rope			Patent or Hard Laid Seine Twine					
Size inch Diameter	Feet per lb.	Tensile Strength, lbs.	Sizes. Thread No.	Feet per lb.	Tensile Strength, lbs.	Sizes. Thread No.	Feet per lb.	Tensile Strength lbs.
$\frac{1}{8}$	240	130	6	2880	12	54	311	108
$\frac{3}{16}$	151	210	9	1920	18	60	288	120
$\frac{1}{4}$	105	300	12	1440	24	72	242	144
$\frac{5}{16}$	60	520	15	1152	30	84	200	168
$\frac{3}{8}$	35	780	18	962	36	96	181	192
$\frac{7}{16}$	20	1,040	21	823	42	108	150	216
$\frac{1}{2}$	14 $\frac{1}{2}$	2,220	24	722	48	120	140	240
$\frac{5}{8}$	9 $\frac{1}{2}$	3,460	27	621	54	138	124	264
$\frac{3}{4}$	7	4,450	30	576	60	144	121	288
$\frac{7}{8}$	5 $\frac{1}{4}$	6,680	33	524	66	168	103	336
1	3 $\frac{3}{4}$	8,910	36	483	72	198	87	396
1 $\frac{1}{8}$	3 $\frac{1}{8}$	10,695	42	411	84	210	83	420
1 $\frac{1}{4}$	2 $\frac{1}{2}$	12,480	48	362	96	240	71	480
1 $\frac{1}{2}$	1 $\frac{3}{4}$	17,810						

For Soft Laid Seine Twine, add 20% to number of feet

For Cotton Rope and Cotton Seine Twine, see Index

COTTON LINES

COTTON STAGING TWINES

Cuts are actual sizes.



5 lb. Sacks—100 lb. Bales

No.	12	15	18	21	24	27
Feet per lb.	1350	1000	800	775	575	500
Wt. Balls						
Ounces...	2	2	2	2	2	3

COTTON TROT LINES

Cuts are actual sizes.



Bulk in Bbls. about 150 lbs.

No.	1	2	3
Feet per lb.	165	140	120
Wt. Balls			
Ounces...	8	12	16

MASONS LINES

WHITE OR YELLOW
1 doz. Hanks in Box

Nos.	18	21	24
50 ft.	per gross,		
100 "	"		

COTTON SEINE TWINE

Soft Laid

Actual sizes.



Soft Laid

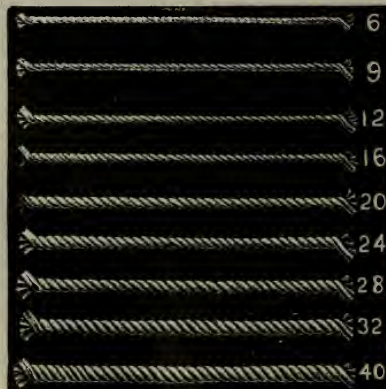
10 lb. Packages in 100 lb. Bales.

6 thread	per lb.,	
9 " "	"	
12 " "	"	
16 to 60 thread	"	

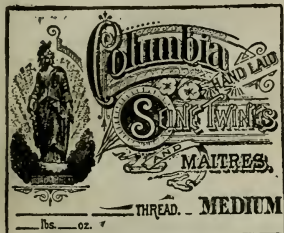
Balls, Tubes, 1/2 c advance in any size to order.

For Linen Gilling Thread, see index.

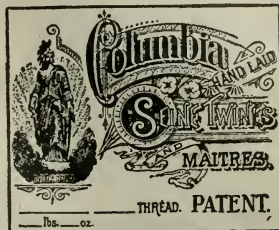
For feet per lb., see preceding page.



COTTON SEINE TWINE

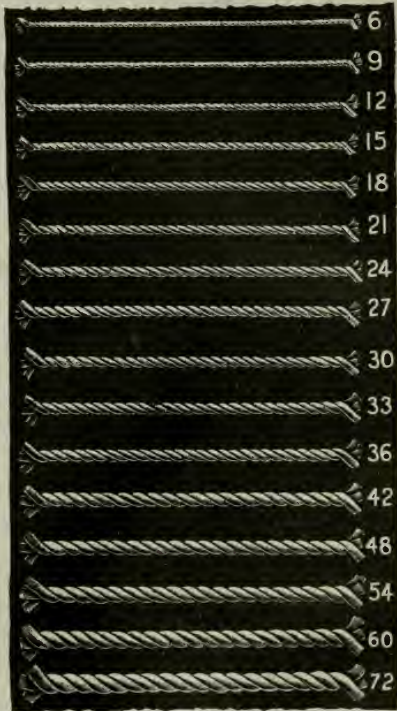
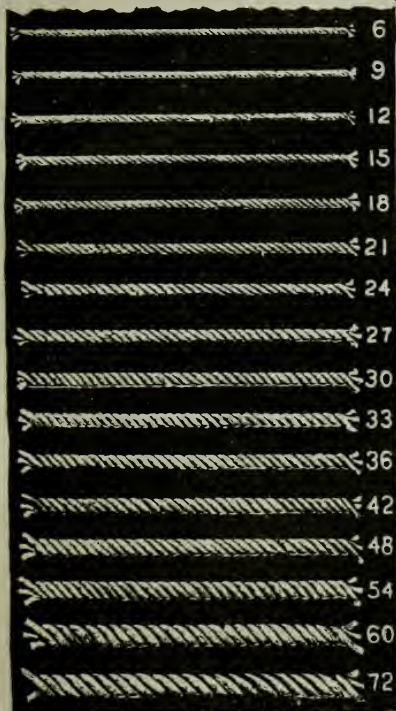


CUTS
ARE
ACTUAL
SIZES



Medium Laid. 10-lb. Packages in 100-lb. Bales

Patent or Hard Laid. 10-lb. Packages in 100-lb. Bales



6-thread	per lb., \$...
9-thread	"
12-thread	"
15-42-thread	"
Larger thread	"

6-thread	per lb., \$...
9-thread	"
12-thread	"
15-42-thread	"
Larger thread	"

MEDIUM COTTON SEINE TWINE—In Balls

Per lb.	Per lb.	Per lb.	Per lb.
9-thread, 1/2 lb., \$.....	21-thread, 1/2 lb., \$.....	36-thread, 1/2 lb., \$.....	42-thread, 1/2 lb., \$.....
12-thread, 1/2 lb.,	24-thread, 1/2 lb.,	36-thread, 1 lb.,	42-thread, 1 lb.,
15-thread, 1/2 lb.,			54-thread, 1 lb.,

HAND LAID MAITRE CORD

100 bales in 10-lb. packages. 60-10 to 144-10.....per lb., \$....

Any size Balls and Tubes to order.

For feet per pound, see second preceding page.

The Rubber Department

IN presenting to you this part of our catalog, we feel we cannot emphasize too strongly the unique position which we occupy in the Mechanical Rubber Goods field. We have handled this line of goods for over thirty years as special agents and distributors for some of the largest manufacturers in the United States. Our activities have brought us in touch not only with the users of the goods and their special requirements, but also with the actual manufacture of all the different items in this important line. We have accumulated an intimate knowledge, therefore, of both ends of the game. *THIS KNOWLEDGE IS AT YOUR SERVICE.* Furthermore, we have a great additional advantage in *not being tied to any one line of goods.*

It is a self-evident proposition that all manufacturers have their particular specialty. Out of *one factory* will come the *best belt*; out of *another factory* will come the *best hose*; from still *another* the *best packings*. Our independent position coupled with our *big outlet* and *enormous distributing power* enables us to select the best items from each manufacturer's line. This policy has resulted in an "*All Star Line.*"

The greater part of these goods is made up in accordance with special formulae, particularly adapted to the needs of our trade, and are offered under *our own brands* and under *OUR own GUARANTEE.*

GEO. B. CARPENTER & CO.

Some of Our Leading Brands

"Old Colony"

Rubber Belting	Sand Blast Hose
Air and Tool Hose	Steam Hose
Brewers' Hose	Water Hose
Creamery Hose	Sheet Packing
Garden Hose	Piston Packing
Double Jacket C. R. L. Fire Hose	Square Flax Packing

CHALLENGE

Garden Hose (Moulded)	Rubber Belting
Suction Hose	Hydraulic Packing
Tool Hose (Moulded)	Square Flax Packing
Water Hose (Moulded)	

BANNER

Conveyor Belting	Superheat Sheet Packing
Underwriters' C. R. L. Fire Hose	Asbestos Valve Stem Packing
Superheat Steam Hose	

EKONOMY

Steam Hose	Tool Hose
Sheet Packing	Matting

CARPENCO

Stitched Canvas Belting
Rubber Sheet Tiling

WHITE STAR

Deck Hose

Oiled and Rubber Clothing
Rubberhide Boots

Moulded Rubber Goods
Tires and Tubes

We also stock all of the best known and widely advertised brands of mechanical rubber goods.

GEO. B. CARPENTER & CO.



Several Views
of Our
Rubber
Department



Showing
Belting,
Hose, Packing
& Tire Stocks



RUBBER BELTING



"Old Colony"

RUBBER BELT

"The Last Word In Belt Construction"

CONSTRUCTION

It consists of a special high grade tight woven duck, thoroughly stretched. Tough and elastic new rubber friction between every ply with an added feature of a heavy cushion between the first and second layers of duck around the entire belt, which is made to give it more life on small fast running pulleys, also allowing the outside ply to stretch more than the inner, preventing the belt from coming apart. The plies are literally welded together by pure gum, which is forced under pressure into every fibre of the duck. A tremendously strong belt is the result. It is pliable, fit for the heaviest duties in power transmission without stretch or ply separation.

USES

It is recommended for stone crushers, saw, paper, stamp, cement mills, bleacherries, brick and silica plants, sand and gravel pits or any other place where a good substantial quality belt like Old Colony is required.

We base our recommendations on experience and practice and we solicit your inquiries.

A trial order will be appreciated.

INDIAN HEAD

Our Indian Head is particularly designed as a reliable transmission belt for general use. We recommend it for satisfactory service under all but extreme conditions. The duck is heavy and strong, and the rubber is of very good quality. In its construction caution is taken to insure straight running, flexibility, uniform thickness.

Quality considered and from a standpoint of service value, Indian Head is an attractive purchase.

CHALLENGE BELTING

A great market exists for rubber belting where the strength and high quality of Old Colony and Indian Head brands are not essential. Challenge offers maximum value to meet this demand for a good belt at a moderate price.

It would be difficult to overstate the features that make it a leader in its class. It is a trifle lighter than our better grades but yet sturdy enough for general transmission service, where moderate loads and favorable pulleys but no excessive speed exists.

We can also quote on popular advertised grades of rubber belting such as: Rainbow, Peerless, Durham and Huron.

We also are in a position to furnish special belts for special purposes, such as: Axle Dynamo, Oil Well, Special Stitched, Planer, Extractor, Hog Beater, Vanner, etc.

PRICE LIST
RUBBER BELTING

Adopted by Mechanical Rubber Goods Manufacturers Association, April 26, 1910.
In effect May 2, 1910.

Width Inches	Piles									
	2	3	4	5	6	7	8	9	10	
1	\$0.09	\$0.11	\$0.13							
1 1/4	.11	.13	.16							
1 1/2	.13	.15	.19	\$0.23						
1 3/4	.15	.17	.22	.27						
2	.18	.20	.25	.31	\$0.37					
2 1/2	.22	.25	.31	.38	.46					
3	.26	.30	.37	.45	.55					
3 1/2	.30	.35	.43	.53	.65					
4	.34	.40	.50	.61	.75					
4 1/2	.38	.46	.55	.69	.84	\$0.86				
5	.42	.50	.61	.76	.91	1.06				
6	.50	.60	.72	.89	1.08	1.25	\$1.44			
7	.59	.70	.84	1.04	1.25	1.46	1.68			
8	.67	.80	.96	1.19	1.44	1.68	1.92			
9	.76	.90	1.07	1.34	1.60	1.88	2.16			
10	.84	1.00	1.20	1.49	1.77	2.09	2.40	\$2.70	\$3.00	
11	.92	1.10	1.32	1.63	1.96	2.29	2.62	2.97	3.30	
12	1.00	1.20	1.43	1.78	2.15	2.50	2.85	3.22	3.58	
13	1.10	1.30	1.56	1.95	2.34	2.73	3.12	3.51	3.90	
14	1.19	1.40	1.69	2.11	2.54	2.96	3.39	3.80	4.23	
15	1.28	1.52	1.83	2.28	2.74	3.19	3.65	4.12	4.58	
16	1.37	1.65	1.96	2.44	2.94	3.42	3.92	4.41	4.90	
18	1.55	1.87	2.22	2.77	3.33	3.88	4.44	5.00	5.55	
20	1.74	2.09	2.49	3.10	3.73	4.35	4.97	5.60	6.23	
22	1.94	2.33	2.77	3.47	4.16	4.85	5.54	6.23	6.93	
24	2.16	2.60	3.08	3.85	4.62	5.39	6.16	6.93	7.70	
26	2.38	2.86	3.39	4.23	5.08	5.93	6.78	7.63	8.48	
28	2.60	3.12	3.70	4.62	5.54	6.47	7.39	8.33	9.25	
30	2.82	3.39	4.00	5.00	6.00	7.00	8.00	9.00	10.00	
32	3.04	3.65	4.31	5.39	6.47	7.55	8.62	9.70	10.78	
34	3.26	3.92	4.62	5.78	6.93	8.09	9.24	10.40	11.55	
36	3.48	4.18	4.93	6.16	7.39	8.62	9.86	11.10	12.33	
38	3.70	4.44	5.24	6.55	7.85	9.16	10.47	11.79	13.10	
40	3.92	4.71	5.55	6.93	8.32	9.70	11.09	12.49	13.88	
42	4.14	4.97	5.85	7.32	8.78	10.24	11.70	13.16	14.63	
44	4.36	5.24	6.16	7.70	9.24	10.78	12.32	13.86	15.40	
46	4.58	5.50	6.47	8.08	9.70	11.32	12.94	14.56	16.18	
48	4.80	5.76	6.73	8.47	10.16	11.86	13.55	15.14	16.83	
50	5.02	6.03	7.08	8.85	10.63	12.40	14.17	15.93	17.70	
52	5.22	6.29	7.39	9.24	11.09	12.94	14.78	16.63	18.48	
54	5.46	6.56	7.70	9.63	11.55	13.48	15.40	17.33	19.25	

For "Endless Belts," a charge of three feet additional to the actual pulley length is made.

INSTALLATION AND MAINTENANCE OF BELTING

Correct alignment and lubrication are always essential.

Long center-to-center distances for horizontal drives, and short centers for vertical drives are recommended.

Rubber belting does not give the best service on half or quarter twists, cone pulleys or shifters.

All belt ends should be cut perfectly square and joined carefully, as this will insure true running and equal pull. There are a great many practical fasteners on the market, each with its own following. We, therefore, hesitate to recommend any particular fastener, and we list only those we know have merit.

The following list of Dos and Don'ts should be of interest to belt users.

DO

Secure good alignment.
Balance pulleys.
Use belt clamps.
Lace carefully.
Have driving side below.
Have broad belts.
Use large pulleys.
Use moderate tensions.
Have long centers horizontally.
Have short centers vertically.

DON'T

Use vertical drive.
Use quarter twist drive.
Have driving side on top.
Use strong tension.
Use high crown pulley.
Use shifters with guide bars.
Use small pulleys.
Use heavy belts.
Use animal oils on belts.

We do not recommend rubber belts made endless for the reason that the glue used for splicing deteriorates, and the belts must be taken up frequently. In addition to this, the laps are liable to bulge. All this involves extra labor and expense.

HINTS ON THE USE OF RUBBER BELTING

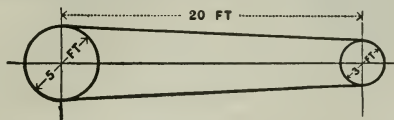
Precaution should be used in arranging pulleys and shafting, in order to obtain the full power and the full service. The diameter of the pulleys should be as large as it is possible to have them, as a belt stretches on the outside, while on the inside it compresses. In comparison with a leather belt, 4-ply rubber is equivalent to a single leather belt; 6-ply rubber is equivalent to a double leather belt.

The belt, before adjusted to the pulley, should be cut shorter than the distance around the pulleys by one-eighth to one-quarter of an inch for every foot, when measured with a tape or string. In narrow belts, butt the two ends together, making two rows of holes in each, and lace with lacing. On wide belts, in addition, sew on a thin piece of rubber or leather, to strengthen the joints. The seam side of the belt should always be placed outside and not next to the pulleys. In case the belt slips, which occurs very seldom, it is best to coat the side next to the pulley lightly with boiled linseed oil.

Grease and all animal oils are injurious to rubber belts. Especial care should be taken to protect the edges from them, as they are liable to decompose the belt.

TO FIND THE LENGTH OF A BELT

When pulleys are small or about the same diameters, add the diameters of the two pulleys together, divide the result by two, and multiply the quotient by three and one-seventh. Add the product to twice the distance between the centers of shafts, and you have the length required.



5 ft. diam. one pulley.	20 ft. distance between centers.
3 ft. diam. one pulley.	2
2) 8 sum of diameters.	40 ft.
4 = $\frac{1}{2}$ sum.	12.57
$3\frac{1}{4}$	52.57 ft. = 52 ft. 6 $\frac{3}{4}$ in., length of belt.
12.57 ft.	

In putting on belting it should be stretched as tightly as possible, and with wide belts this can best be done by the use of clamps secured firmly to each end of the belt and drawn together by clamp rods running parallel with and outside the edges of the belt. There is no danger of breaking, as a belt six inches wide and 3-ply thick will stand a direct strain of 5,000 pounds, and other sizes in proportion.

BEST METHOD OF LACING BELTING

The belt to be adjusted to the pulleys (depending on the thickness of the belt) should be cut shorter than the distance around the pulleys by $\frac{1}{8}$ to $\frac{1}{4}$ of an inch for every foot in length, when measured with a metallic tape or wire drawn tightly around the pulleys.



Wire Lacing—Pulley Side



Wire Lacing—Outside

RUBBER CONVEYOR AND ELEVATOR BELTING

**"BANNER" BRAND CONVEYOR BELT**

Long Wear and Low Service Cost

"Banner" Brand Conveyor Belt is built for the hardest service, long hauls, and sharp heavy materials. For such service we recommend it as the best suited belt on the market.

Tough Rubber Cover—withstands abrasion—protects fabric from moisture and elements.

Long-Lived Friction—prevents ply separation—long vitality.

Edge Construction—will not peel, break loose or wear rough.

Fabric—special duck—extreme strength lengthwise and flexibility crosswise.

Low Service Cost—continuous service and large tonnage make "Banner" Brand cost less than other belts.

Made in any ply and width, and with padded surface covers, from $\frac{1}{32}$ to $\frac{1}{4}$ inch thick on one or both sides.

To order only.

"BILTWELL" BRAND CONVEYOR BELT

A Dependable Belt for all General Requirements

"Biltwell" Brand Conveyor Belt is made to meet the needs where a high quality as "Banner" is not justified by the requirements. It will give excellent service under normal conditions. Its quality is high—much higher than many other grades on the market. Yet its price is moderate and it is economical in operation. It will outlast any other belt of its class.

Made in any ply and width and with padded surface covers from $\frac{1}{32}$ to $\frac{1}{4}$ inch thick.

To order only.

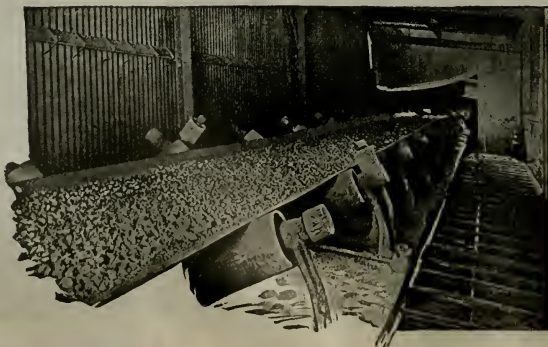
ELEVATOR BELTING**INDIAN HEAD ELEVATOR BELT**

Indian Head is made specifically for elevator service. It is particularly efficient on sulphur legs in grain elevating. It is made with a special sulphur fume proof cover.

To order only.

CHALLENGE ELEVATOR BELT

Made to meet ordinary conditions. Has a good duck and friction. Bucket holes punched upon request.



LEATHER BELTING



We are the Chicago distributors for the **DETROIT OAK BELTING CO.**, one of the best known manufacturers of leather belting in the country. Their goods are so well and favorably known that we have adopted them as our standard of quality.

A careful inspection of their plant demonstrated to us their superior facilities for manufacturing high grade goods. They follow the policy that "anything worth doing at all, is worth doing well" and this is reflected in the quality and workmanship of their belting.

We carry at all times in Chicago stock, in all sizes, the following weights and grades:

Best Grade Regular Single.
Best Grade Regular Double.

King Regular Single.
King Regular Double.

Velocity Double.

Other weights can be furnished promptly upon receipt of order, direct from the factory.

BEST GRADE

This belt is made to give the longest life and greatest durability under the most severe conditions. Cut entirely from center portion of the butt.

HEAVY SINGLE

16 oz. or More According to Width

For general use where a single belt of high quality and heavy weight is required.

REGULAR SINGLE

14 oz. or More According to Width

For general use where a medium weight single is required. Especially adapted to small pulleys at high speed.

HEAVY DOUBLE

31 to 33 oz., According to Width

An unusually heavy belt, recommended for service where pulleys are large and excessive horse-power demanded for width of pulley surface. Main belts, heavy saw mill drives and cement machinery are a few of the places.

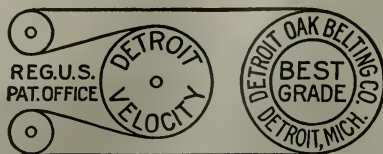
REGULAR DOUBLE

28 oz. or More, According to Width

Our most commonly used weight, recommended for general service also where difference in diameter of pulley is considerable speed high, and these combined conditions make it inadvisable to use a belt that is too thick.

LEATHER BELTING

"VELOCITY" HIGH SPEED BELTING



Made in Double Only

This belt weighs 23 to 26 ounces per square foot according to width. Recommended for motors, flour mill rolls, wood-working machinery and high speed work, generally, where pulleys are sufficiently large. The belt is NOT made of shoulder stock, but is strictly center cut. Made in double weight only, not over 14 inches wide.



MADE IN ALL WEIGHTS

Our "Naiad" brand of belting is guaranteed to be absolutely waterproof and cut from the center portion of No. 1 belting butts.

It is made in various weights to suit the special conditions under which the belt is proposed to run.

Special belts made in this grade for blowers and fans in saw mills, planing mills, mines, etc., where it is damp.

THE BELT FOR DAMP PLACES

Besides local conditions incident to many manufacturing plants, such as saw mills, pulp mills, paper mills, also mines and laundries, there are climatic conditions in certain localities which make a high grade waterproof leather belt a necessity.

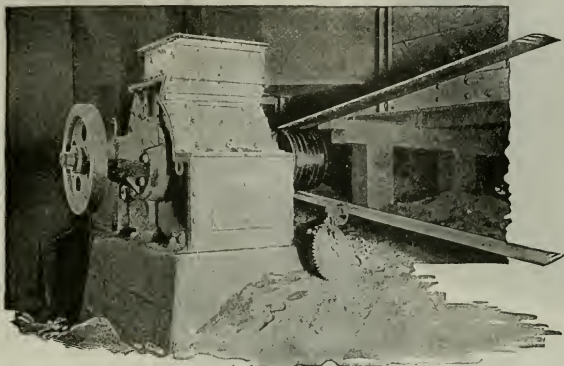
Try our Naiad Velocity Double on your heavy planers when pulleys are 6 inches or over.



Registered U. S. Patent Office

Made of selected side stock, carefully stretched and curried. A SHORT LAP belt at a moderate price. Can furnish in heavy single and regular double not over 12 inches wide, and medium single not over 8 inches wide. Also light single up to 6 inches and light double to 8 inches wide. There are many places where money can be saved by using this belt. You will be satisfied that it's a good belt and well worth the price. Heavy single 16 to 17 oz., medium single 14 to 15 ½ oz. and double 28 to 30 oz. according to width. Light single about 12 oz. and light double about 24 oz.

LEATHER BELTING LIST



PRICE LIST

Adopted by Leather Belting Mfrs. Association Nov. 21, 1906

PRICE PER RUNNING FOOT

½ inch.....	\$0.12	5 ½ inch.....	\$1.32	23 inch.....	\$5.52
⅝ inch.....	.15	6 inch.....	1.44	24 inch.....	5.76
¾ inch.....	.18	6 ½ inch.....	1.56	25 inch.....	6.00
7/8 inch.....	.21	7 inch.....	1.68	26 inch.....	6.24
1 inch.....	.24	8 inch.....	1.92	28 inch.....	6.72
1 ¼ inch.....	.30	9 inch.....	2.16	30 inch.....	7.20
1 ½ inch.....	.36	10 inch.....	2.40	32 inch.....	7.68
1 ¾ inch.....	.42	11 inch.....	2.64	34 inch.....	8.16
2 inch.....	.48	12 inch.....	2.88	36 inch.....	8.64
2 ¼ inch.....	.54	13 inch.....	3.12	38 inch.....	9.12
2 ½ inch.....	.60	14 inch.....	3.36	40 inch.....	9.60
2 ¾ inch.....	.66	15 inch.....	3.60	44 inch.....	10.56
3 inch.....	.72	16 inch.....	3.84	48 inch.....	11.52
3 ¼ inch.....	.78	17 inch.....	4.08	52 inch.....	12.48
3 ½ inch.....	.84	18 inch.....	4.32	56 inch.....	13.44
3 ¾ inch.....	.90	19 inch.....	4.56	60 inch.....	14.40
4 inch.....	.96	20 inch.....	4.80	64 inch.....	15.36
4 ½ inch.....	1.08	21 inch.....	5.04	68 inch.....	16.32
5 inch.....	1.20	22 inch.....	5.28	72 inch.....	17.28

Double belts twice the price of single. Three ply belts three times the price of single.

PATENT SOLID ROUND
BELTING

½ inch.....	\$0.38
⅝ inch.....	.48
¾ inch.....	.60
7/8 inch.....	.80
1 inch.....	.96
1 ¼ inch.....	1.10
1 ½ inch.....	1.15
1 ¾ inch.....	1.40

ROUND TWIST BELTING

¾ inch.....	\$0.27
1 inch.....	.38
1 ¼ inch.....	.48
1 ½ inch.....	.60
1 ¾ inch.....	.80
2 inch.....	.96

CUT LACING

Per Bundle of 100 feet

¼ inch.....	\$2.50
⅝ inch.....	3.00
¾ inch.....	3.75
7/8 inch.....	4.50
1 inch.....	5.50
1 ¼ inch.....	6.50
1 ½ inch.....	7.50

IMPORTANT

Give Exact Tape Line Measurement

Do not try to avoid shortening your belts after being run awhile by shrinking the measurement when ordering, and then having to force them on the pulleys.

No one can tell the exact stretch of a piece of leather, and a belt will almost invariably become crooked at the point where it is forced on, owing to the unusual strain on a limited space, and the manufacturer is then accused of furnishing a belt with a spongy spot in it.

Care in this regard will save trouble for all concerned.

CARPENCO STITCHED CANVAS BELTING

Our people have studied the manufacture of Canvas Belting for the past ten years, and the opportunity of building a new plant has enabled them to incorporate many new ideas and to install the latest design of machinery and labor saving appliances, which no other plant in the country possesses. This up-to-date equipment insures the most perfectly cured and finished Belting on the market.

The cotton duck used in the manufacture of "Carpenco" Belting is made from especially selected long staple cotton tightly woven on powerful high tension looms. We specify an extra hard twist in the warp and filler threads, giving great tensile strength to the duck. Every roll of "Carpenco" Belting up to 14 inches in width, is folded by our improved method of pressure rollers, thereby insuring mechanically perfect folding. Belting over 14 inches in width is "Built Up" by expert workmen, each ply having two selvage edges.

The compound used in the waterproofing of "Carpenco" Belting is a combination of pure oils and gums, which are neutral in character and will not injure nor harden the fabric, rendering a pliable Belt in all degrees of temperature.

The red paint is extremely elastic in texture and has ample body to protect the waterproofing compound and give maximum traction when in operation.

From the paint tanks the Belt is immediately conveyed to our stretchers, where the stretch is eliminated by the means of electrically driven power winches. The Belting is then allowed to remain on the stretchers until the compound is thoroughly set, thereby preventing the stretch from creeping back when the tension is released.

Carried in Chicago stock from 1½ inches, 3-ply to 24 inches, 6-ply.

CHALLENGE STITCHED CANVAS BELTING

Challenge is of the same general construction as our "Carpenco," but it is made of lighter duck and is therefore desirable for lighter service.

It is not carried in stock, but is furnished to order only. Odd sizes are made special and require three weeks for manufacture.

PRICE LIST STITCHED CANVAS BELTING

Adopted by the
Canvas Stitched Belt Manufacturers' Association
Effective October 1st, 1912.

Width	4 Ply	5 Ply	6 Ply	8 Ply	10 Ply	Width	4 Ply	5 Ply	6 Ply	8 Ply	10 Ply
1 in.	.12					15 in.	1.65	2.06	2.48	3.30	4.13
1½ in.	.18					16 in.	1.76	2.20	2.64	3.52	4.40
2 in.	.24					18 in.	1.98	2.48	2.97	3.96	4.95
2½ in.	.30	.38	.45			20 in.	2.20	2.75	3.30	4.40	5.50
3 in.	.35	.44	.53			22 in.	2.42	3.03	3.63	4.84	6.05
3½ in.	.39	.49	.59			24 in.	2.64	3.30	3.96	5.23	6.60
4 in.	.43	.54	.65	.86		26 in.	3.12	3.90	4.68	6.24	7.80
4½ in.	.47	.59	.71	.94		28 in.	3.36	4.20	5.04	6.72	8.40
5 in.	.51	.64	.77	1.02		30 in.	3.60	4.50	5.40	7.20	9.00
6 in.	.60	.75	.90	1.20		32 in.	3.84	4.80	5.76	7.68	9.60
7 in.	.70	.88	1.05	1.40		34 in.	4.08	5.10	6.12	8.16	10.20
8 in.	.80	1.00	1.20	1.60		36 in.	4.32	5.40	6.48	8.64	10.80
9 in.	.90	1.13	1.35	1.80		38 in.	4.56	5.76	6.96	9.36	11.76
10 in.	1.00	1.25	1.50	2.00		40 in.	4.80	6.00	7.20	9.60	12.00
11 in.	1.10	1.38	1.65	2.20		42 in.	5.04	6.30	7.56	10.08	12.60
12 in.	1.20	1.50	1.80	2.40	3.00	44 in.	5.28	6.60	7.92	10.56	13.20
13 in.	1.43	1.79	2.15	2.86	3.58	46 in.	5.52	6.90	8.28	11.04	13.80
14 in.	1.54	1.93	2.31	3.08	3.85	48 in.	5.76	7.20	8.64	11.52	14.40

Charge for Splice on Endless Belts. All belts 12 in. wide or under, three feet is the minimum charge. Belts over twelve inches wide, the charge is to be the equivalent of three times the width of the belt.

"CARPENCO" ENDLESS THRESHER BELTS

"Carpenco" Thresher Belts are stretched and cured by our improved method. They are thoroughly inspected and the splice tested before leaving our factory, making it practically impossible to produce a defective Belt.

Thresher Belts are always made endless and are three feet less in length than ordered. For example: An order for 100 feet is 97 feet long when made endless, and billed at 100 feet. The three feet are required to make the splice.

Always send this information when ordering special endless belts: Diameter of pulleys and distance between shaft centers.

PRICE LIST AND STOCK SIZES OF ENDLESS THRESHER BELTS

Adopted by the Canvas Stitched Belt Manufacturers' Association.

Effective October 2nd, 1916.

Length, feet	4 Ply				5 Ply				6 Ply	
	50	75	100	125	150	125	150	160	150	160
Width, inches										
5	13.75	20.25	26.50							
6	16.25	23.75	31.25	38.75						
7	19.00	27.75	36.50	45.25	54.00	56.75	67.75			
8	21.50	31.50	41.50	51.50	61.50	64.50	77.00	82.00	92.50	98.50
9					69.25		87.00	92.75	104.00	110.75

Each belt is listed as an entire Belt. All other sizes and lengths made special to order.
WE CAN ALSO QUOTE ON SAWYER BELTING

ANCHOR WHITE COTTON SOLID WOVEN BELTING



We carry as large a stock of Cotton Belting as there is in this section, and can furnish it promptly in all piles and widths.

Cotton belting is particularly adapted for light transmission and conveyor work, and is therefore much in demand in flour mills, bakeries and other plants of this character.

Width inches	2-Ply	3-Ply	4-Ply	5-Ply	6-Ply	8-Ply	10-Ply	Width inches	2-Ply	3-Ply	4-Ply	5-Ply	6-Ply	8-Ply	10-Ply
1	\$.04	\$.06	\$.09	\$.15	\$.20	\$.30	\$.40	12	\$.35	\$.50	\$.66	\$.83	\$1.00	\$1.35	\$1.80
1 1/4	.04 1/2	.06 1/2	.10	.16	.22	.32	.42	14	.43	.62	.78	.98	1.20	1.60	2.20
1 1/2	.05	.07 1/2	.11	.18	.24	.36	.48	16	.49	.72	.90	1.15	1.40	1.95	2.45
1 3/4	.05 1/2	.08 1/2	.12	.19	.29	.42	.54	18	.57	.82	1.00	1.28	1.55	2.15	2.70
2	.06	.09 1/2	.13	.21	.30	.46	.60	20	.61	.90	1.15	1.45	1.75	2.35	2.95
2 1/4	.07 1/2	.11	.15	.23	.32	.48	.64	22	.65	1.00	1.35	1.65	1.95	2.60	3.25
2 1/2	.08 1/2	.13	.18	.26	.34	.51	.68	24	.69	1.10	1.55	1.85	2.16	2.85	3.60
3	.10	.15	.20	.29	.36	.54	.72	26	.77	1.35	1.75	2.00	2.36	3.10	3.90
3 1/2	.11 1/2	.17	.23	.31	.38	.58	.76	28	.85	1.50	1.90	2.15	2.60	3.35	4.20
4	.13	.19	.26	.33	.41	.62	.80	30	.90	1.60	2.10	2.40	2.85	3.60	4.50
4 1/2	.14 1/2	.21	.28	.36	.44	.66	.85	32	1.00	1.70	2.25	2.60	3.00	3.85	4.80
5	.16	.23	.30	.38	.47	.69	.88	34	1.10	1.80	2.40	2.80	3.25	4.10	5.10
5 1/2	.18	.25	.33	.41	.50	.72	.95	36	1.20	1.90	2.50	3.00	3.50	4.35	5.40
6	.21	.29	.38	.48	.58	.80	1.10	38	1.30	2.05	2.65	3.20	3.70	4.60	5.70
8	.23	.33	.44	.55	.65	.85	1.20	40	1.40	2.15	2.80	3.40	3.90	4.85	6.00
9	.26	.37	.50	.61	.73	1.00	1.40	42	1.50	2.25	2.90	3.60	4.05	5.10	6.30
10	.29	.42	.56	.69	.82	1.15	1.60	44	1.60	2.35	3.00	3.75	4.20	5.45	6.60
								46	1.80	2.50	3.20	4.00	4.80	5.80	7.20

Special widths and extra lengths made to order.

GOLD LINE COTTON SAND BELTING

Heavy Single Ply. Per Foot

2 inch \$0.02 1/2	5 inch \$0.05	10 inch \$0.10	18 inch \$0.15
3 inch03	6 inch06	12 inch11	20 inch16
4 inch04	7 inch07	14 inch12	22 inch18
4 1/2 inch04 1/2	8 inch08	16 inch13	24 inch20

GENUINE BALATA BELTING

Balata belting is recommended for wet mines, tanneries and dairies—in fact any place where moisture and dampness prevail. It is positively proof against the action of water, acids and alkalies.

This belt is not proof against heat, owing to the nature of the compounds with which it is impregnated, and it will not give satisfactory service if used in warm places.

STANDARD UNIFORM LIST GENUINE BALATA BELTING

Effective March 15, 1911

Width inches	3-Ply	4 Ply	5 Ply	6 Ply	7 Ply	8 Ply	Width inches	3-Ply	4 Ply	5 Ply	6 Ply	7 Ply	8 Ply
1	\$0.18	\$0.24	...	...	...	...	13	\$2.34	\$3.12	\$3.90	\$4.68	\$5.46	\$6.24
1 1/4	.23	.30	...	...	...	...	14	2.52	3.36	4.20	5.04	5.88	6.72
1 1/2	.27	.36	...	...	...	...	15	2.70	3.60	4.50	5.40	6.30	7.20
1 3/4	.32	.42	...	...	...	...	16	2.88	3.84	4.80	5.76	6.72	7.68
2	.36	.48	\$0.60	...	...	...	17	3.06	4.08	5.10	6.12	7.14	8.16
2 1/4	.41	.54	.68	...	...	...	18	3.24	4.32	5.40	6.48	7.56	8.64
2 1/2	.45	.60	.75	...	...	...	19	3.42	4.56	5.70	6.84	7.98	9.12
2 3/4	.50	.66	.83	...	...	...	20	3.60	4.80	6.00	7.20	8.40	9.60
3	.54	.72	.90	...	...	...	21	3.78	5.04	6.30	7.56	8.82	10.08
3 1/4	.59	.78	.98	...	...	...	22	3.96	5.28	6.60	7.92	9.24	10.56
3 1/2	.63	.84	1.05	...	...	...	23	4.14	5.52	6.90	8.28	9.66	11.04
3 3/4	.68	.90	1.13	...	...	...	24	4.32	5.76	7.20	8.64	10.08	11.52
4	.72	.96	1.20	...	...	...	25	4.50	6.00	7.50	9.00	10.50	12.00
4 1/4	.77	1.02	1.28	...	...	...	26	4.68	6.24	7.80	9.36	10.92	12.48
4 1/2	.81	1.08	1.35	...	...	...	28	5.04	6.72	8.40	10.08	11.76	13.44
5	.90	1.20	1.50	...	...	...	30	5.40	7.20	9.00	10.80	12.60	14.40
5 1/2	.99	1.32	1.65	...	...	...	32	5.76	7.68	9.60	11.52	13.44	15.36
6	1.08	1.44	1.80	\$2.16	...	...	34	6.12	8.16	10.20	12.24	14.28	16.32
6 1/2	1.17	1.56	1.95	2.34	...	...	36	6.48	8.64	10.80	12.96	15.12	17.28
7	1.26	1.68	2.10	2.52	\$2.94	\$3.36	38	6.84	9.12	11.40	13.68	15.96	18.24
7 1/2	1.35	1.80	2.25	2.70	3.15	3.60	40	7.20	9.60	12.00	14.40	16.80	19.20
8	1.44	1.92	2.40	2.88	3.36	3.84	42	7.56	10.08	12.60	15.12	17.64	20.16
9	1.62	2.16	2.70	3.24	3.78	4.32	44	7.92	10.56	13.20	15.84	18.48	21.12
10	1.80	2.40	3.00	3.60	4.20	4.80	46	8.28	11.04	13.80	16.56	19.32	22.08
11	1.98	2.64	3.30	3.96	4.68	5.28	48	8.64	11.52	14.40	17.28	20.16	23.04
12	2.16	2.88	3.60	4.32	5.04	5.76							

We quote on Dicks, Lanco and Victor Balata Belting upon receipt of specifications.

"BLACK DIAMOND" BELTING

The compound, or waterproofing of "Black Diamond" belting is made from a heavy solid hydrocarbon gum which is forced into every fibre of the belt by heat and extreme pressure. This compound resists all alkalies and acids, as well as the action of direct heat. It will not stretch more than any good belt, as the compound sets quickly and keeps out the stretch. It is proof against the action of water, acids and alkalies.

"Black Diamond" Cotton Belting is recommended for conveyor service, particularly for hot silica and sands.

PRICE LIST

"BLACK DIAMOND" SOLID WOVEN COTTON BELTING

Effective October 1st, 1912.

Width inches	4 Ply	5 Ply	6 Ply	8 Ply	10 Ply	Width inches	4 Ply	5 Ply	6 Ply	8 Ply	10 Ply
1	\$0.12	...	...	...	...	15	\$1.65	\$2.06	\$2.48	\$3.30	\$4.13
1 1/2	.18	...	...	...	...	16	1.76	2.20	2.64	3.52	4.40
2	.24	\$0.30	\$0.36	...	...	18	1.98	2.48	2.97	3.96	4.95
2 1/2	.30	.38	.45	...	...	20	2.20	2.75	3.30	4.40	5.50
3	.35	.44	.53	...	...	22	2.42	3.03	3.63	4.84	6.05
3 1/2	.39	.49	.59	...	...	24	2.64	3.30	3.96	5.28	6.60
4	.43	.54	.65	\$0.86	...	26	3.12	3.90	4.68	6.24	7.80
4 1/2	.47	.59	.71	.94	...	28	3.36	4.20	5.04	6.72	8.40
5	.51	.64	.77	1.02	...	30	3.60	4.50	5.40	7.20	9.00
6	.58	.75	.90	1.20	...	32	3.84	4.80	5.76	7.68	9.60
7	.70	.88	1.05	1.40	...	34	4.08	5.10	6.12	8.16	10.20
8	.80	1.00	1.20	1.60	...	36	4.32	5.40	6.48	8.64	10.80
9	.90	1.13	1.35	1.80	...	38	4.56	5.70	6.84	9.00	11.16
10	1.00	1.25	1.50	2.00	...	40	4.80	6.00	7.20	9.36	11.52
11	1.10	1.38	1.65	2.20	...	42	5.04	6.30	7.56	9.84	12.12
12	1.20	1.50	1.80	2.40	\$3.00	44	5.28	6.60	7.92	10.32	12.72
13	1.43	1.79	2.15	2.86	3.58	46	5.52	6.96	8.40	10.80	13.20
14	1.54	1.93	2.31	3.08	3.85	48	5.76	7.20	8.64	11.04	13.44

Charge for Splice on Endless Belts. All belts 12 inches wide or under, three feet is the minimum charge. Belts over 12 inches wide, the charge is to be the equivalent of 3 times the width of the belt.

BELT MAKERS' TOOLS

Every Industrial Plant Using Belting Should Have Them



Fig. 334A



Fig. 334B



Fig. 334C



Fig. 334D



Fig. 334E



Fig. 334F



Fig. 334I



Fig. 334G



Fig. 334H

ORDER BY NUMBER

No. 334A.	Belt Plane, for making laps.....	each	\$3.00
No. 334B.	Scraper, for removing old glue from belts.....	"	1.00
No. 334C.	Heel Shave, for making laps.....	"	1.00
No. 334D.	Belt Scraper.....	"	.60
No. 334E.	Glue Brush, 2 1/2 inch.....	"	2.25
No. 334F.	Nippers, for cutting off old rivets.....	"	1.25
No. 334G.	Belt Knife.....	"	.25
No. 334H.	Finger Steel, for sharpening scraper No. 334D.....	"	.35

Fig. 334I GLUE HEATER

A thoroughly satisfactory portable oil lamp and glue pot heater. Especially adapted for millwright work, such as repairing and putting on belts.

Made of heavy tin, wire reinforced in legs. We carry in stock either with heavy tin pail and cup, numbered 1, 2 and 3, or with pail and cup of copper, numbered 10, 20 and 30.

No. 1.	1 pint, tin pail and cup.....	each	\$1.15
No. 2.	2 pint, tin pail and cup.....	"	1.20
No. 3.	3 pint, tin pail and cup.....	"	1.25
No. 10.	1 pint, copper pail and cup.....	"	1.40
No. 20.	2 pint, copper pail and cup.....	"	1.50
No. 30.	3 pint, copper pail and cup.....	"	1.60



Fig. 335J BELT CLAMPS

For Belts	6-14 in.	12-18 in.	18-24 in.	24-36 in.
Price each	\$8.00	\$10.00	\$12.00	\$18.00

BELTING ACCESSORIES

IMPROVED BELT PUNCH AND LACE CUTTER
Or Splicing Tool (Combined)

Fig. 335A

It does the work of two. Cuts the Lace Leather, punches the hole in the belt, and draws the lace through.

Each \$1.00

LX IMPROVED BELT PUNCH
Or Splicing Tool

Fig. 335B

It will catch the lace, and pull it through the belt, when the lace only projects $\frac{1}{4}$ to $\frac{1}{2}$ inch through the belt.

Each \$0.50

LOTHROP PATENT BELT AWLS
For Lacing Belts

Fig. 335C

Price each \$0.50

THE LX COMBINATION BELT CUTTER



Fig. 336A

Cutter, Awl and Pliers in One Tool.
With Adjustable Gauge.... Each \$1.50

REVOLVING BELT PUNCH



Fig. 335D

With 4 tubes..... each \$1.50
Extra tubes " .20

ELLIOTT PATENT LACE CUTTER

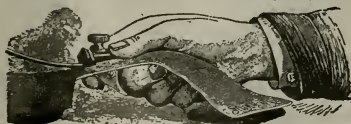


Fig. 335E

Each \$0.50

IMPROVED STEEL BELT COUPLINGS

For Round Belts



Fig. 335L

For Cord

Size	inch	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$			
Per doz.	\$2.00	2.00	2.00	2.50	3.00	3.50	4.00	5.00	6.00	9.00	13.00	18.00	22.00	26.00

BELT GROOVER



Fig. 335F

Each \$0.50

BELT MARKER



Fig. 335G

Each \$0.25

Set—Punch, Groover, Cutters and Pliers.. 1.50

Set—Punch, Special Groover, Cutters and

Pliers and Belt Marker..... 2.00

BELT PUNCH, NICKEL PLATED



Fig. 335H

Each \$0.75

CUTTERS AND PLIERS, NICKEL PLATED



Fig. 335J

Each \$0.75

CENTURY GASKET AND WASHER CUTTER



Fig. 335K

Will cut Gaskets up to 24 inches outside diameter; can be used with bit brace, drill press, or by hand.

Nickel plated each \$3.00

BELT FASTENERS

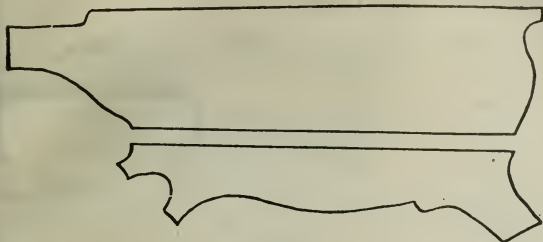


Fig. 336B

"BEST GRADE" CUT LACING

This is strictly a "selected" grade. It is hand cut from the center portion or best part of the hide. Every strand in a bundle is stretched, tested and guaranteed perfect. Packed in cartons which protect the laces, keeping them clean and pliable.

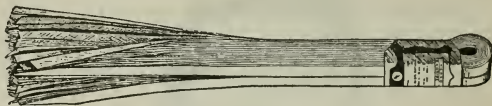


Fig. 336C

"BEST GRADE" RAWHIDE LACE LEATHER

In Full or Trimmed Sides.

No lime or acids are used in curing these hides, and only mechanical methods are used in softening, working and finishing them. This lace leather is cured—not tanned, and therefore never deteriorates. It can be kept in stock for years without growing hard or losing strength.

Price, per square foot.....\$.....

Prices per 100 Feet

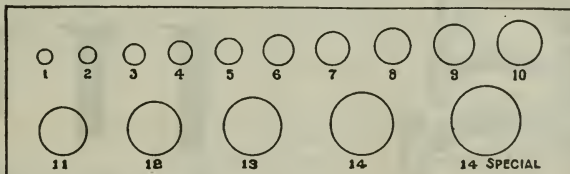
$\frac{1}{4}$ inch wide.....	\$2.50	$\frac{1}{2}$ inch wide.....	\$ 5.50
$\frac{5}{16}$ inch wide.....	3.00	$\frac{3}{8}$ inch wide.....	6.50
$\frac{3}{8}$ inch wide.....	3.75	$\frac{7}{8}$ inch wide.....	7.50
$\frac{7}{8}$ inch wide.....	4.50	1 inch wide.....	10.00

OVAL DRIVE BELT PUNCHES



Size	4	5	6	7	8	9	10	11	12
Price each.....	\$0.40	.40	.40	.50	.50	.50	.60	.60	.60

ROUND BELT PUNCHES



Size hole.....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	14S
Price, each.....	\$0.25	.25	.25	.25	.25	.25	.25	.25	.25	.30	.30	.30	.50	.50	.60

RIVET SET AND HEADER



Fig. 336D

No. 7 for No. 7 Copper Rivets... each	\$0.50	No. 9 for No. 9 Copper Rivets... each	\$0.50
No. 8 for No. 8 Copper Rivets... "	.50	No. 10 for No. 10 Copper Rivets... "	.50

BELT FASTENERS

BLAKE'S IMPROVED BELT STUDS

Per box of 100









No. 6		\$0.60
No. 5		.70
No. 4		.80
No. 3		.90
No. 2		1.25
No. 1		1.65
No. 0		2.00
No. 00		2.50

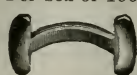



Fig. 337A

Large Cutters for Rubber Belts.....each	\$1.25
Small Cutters for Leather Belts.....each	.90
Awls to spread the slit.....	.25
Awl and Pliers Combined.....	.40

THE LX IMPROVED BELT STUDS

GUN METAL

Per box of 100

No. 3		\$0.90
No. 2		1.25
No. 1		1.65
No. 0		2.00

CUT SHOWS FULL SIZE

Fig. 337B

COMPOSITION WIRE BELT LACING

Per 100 feet

No. 0.	For belts from 1 to 2½ inches...	\$2.00
No. 1.	For single belts 3 inches and under	2.00
No. 2.	For all single belts wider than 5 inches and double under 8 inches....	2.00
No. 3.	For all double belts wider than 8 inches	2.00

OVAL POINTED BELT HOOKS

Made of Norway Wire
with Oval Points

Fig. 337C

No.	Length inches	No. in Box	Per 1,000	No.	Length inches	No. in Box	Per 1,000
15	1½	250	\$2.00	7	1½	250	\$6.00
14	1½	250	2.40	6	1¾	250	8.50
13	¾	500	2.60	5	2¾	250	11.00
12	¾	250	2.80	4	2½	100	14.00
11	¾	500	3.00	3	2¾	100	16.00
10	1½	250	3.50	2	2¾	100	20.00
9	1½	250	4.00	1	2½	100	30.00
8	1½	250	5.00	..	...	...	....

JONES' IMPROVED BEVEL
POINTED BELT
HOOKS

Fig. 337D

No.	Amount in Box	Per 1,000	No.	Amount in Box	Per 1,000
10	500	\$ 3.50	4	200	\$14.00
9	500	4.00	3	200	16.00
8	500	5.00	2	200	20.00
7	250	6.00	1	100	30.00
6	250	8.50	2½ in.	100	50.00
5	250	11.00	3 in.	100	60.00

COPPER RIVETS AND BURRS

Actual Size

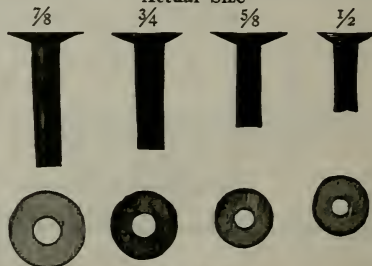


Fig. 337E

Rivets and Burrs, equally assorted, packed in 1 lb. boxes. Made in all lengths ¼ inch to 1½ inches, all numbers.

No.	7	8	9	10	11	12	13	14	15
Price per lb. .	\$0.49	.50	.52	.54	.56	.58	.60	.65	.70

Assorted lengths in ½ pound packages only, five cents additional.

POTTER'S PATENT BELT HOOKS

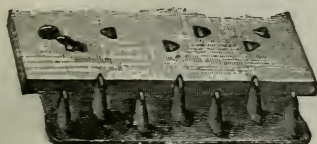


Fig. 335A
Potter's Belt Hook

Two or more hooks are used on belts wider than four inches.

SINGLE LEATHER

No. 1.	For 1	inch belts.....per 100	\$1.50
No. 2.	For 1½	inch belts.....	2.00
No. 3.	For 2	inch belts.....	2.50
No. 4.	For 2½	inch belts.....	3.00
No. 5.	For 3	inch belts.....	3.50
No. 6.	For 3½	inch belts.....	4.50
No. 7.	For 4	inch belts.....	5.50

DOUBLE LEATHER

No. 8.	For 2	inch belts.....per 100	\$5.00
No. 9.	For 2½	inch belts.....	6.50
No. 10.	For 3	inch belts.....	7.50
No. 11.	For 3½	inch belts.....	8.50
No. 12.	For 4	inch belts.....	9.50

3-PLY RUBBER OR COTTON

No. 26.	For 2	inch belts.....per 100	\$4.00
No. 17.	For 2½	inch belts.....	5.00
No. 20.	For 3	inch belts.....	7.00
No. 21.	For 4	inch belts.....	8.00

4-PLY RUBBER OR COTTON

No. 13.	For 2	inch belts.....per 100	\$5.00
No. 14.	For 2½	inch belts.....	6.50
No. 15.	For 3	inch belts.....	7.50
No. 16.	For 4	inch belts.....	9.50



Fig. 335B
Kenehan Steel Belt Fastener

4-PLY OLD BELTS, RUBBER OR COTTON

No. 27.	For 2	inch extra wide.....per 100	\$ 8.00
No. 18.	For 3	inch extra wide.....	10.00
No. 19.	For 4	inch extra wide.....	12.00

5- OR 6-PLY RUBBER OR COTTON

No. 22.	For 3	inch belts.....per 100	\$10.00
No. 23.	For 4	inch belts.....	12.00

6-, 7- AND 8-PLY BELTS, RUBBER OR COTTON

No. 24.	For 3	inch belts.....per 100	\$12.00
No. 25.	For 4	inch belts.....	15.00

OLD SINGLE LEATHER, MADE EXTRA WIDE

No. 28.	For 3	inch wide.....per 100	\$6.00
No. 29.	For 4	inch wide.....	5.00

FOR EXTRA HEAVY LEATHER, RUBBER OR CANVAS DRIVING BELTS

Special "AA."	Teeth 1	inch long.....per 100	\$33.00
Special "A."	Teeth ¾	inch long.....	33.00
Special "B."	Teeth ½	inch long.....	33.00

KENEHAN STEEL BELT FASTENERS

No.	Use for	Packed in Box	Price per 100
0	Light Narrow Belts.....	100	\$0.80
1	Light Narrow Belts.....	100	.90
2	Light Narrow Belts.....	100	1.20
3	Heavy Single Leather or 3-ply Rubber.....	100	1.80
4	Heavy Single Leather or 3-ply Rubber.....	50	2.30
5	Light Double Leather or 4-ply Rubber to 10 inches.....	50	2.70
6	Light Double Leather or 4-ply Rubber to 10 inches.....	50	3.00
7	Double Leather or 5- and 6-ply Rubber.....	50	3.90
8	Double Leather or 5- and 6-ply Rubber.....	50	4.50
9	Extra Heavy Double Leather or 8- to 10-ply Rubber.....	50	4.00
10	Extra Heavy Double Leather or 8- to 10-ply Rubber.....	50	5.50
12	Heavy Driving Belts up to ½ inch thick.....	50	7.00
12	Heavy Driving Belts up to ½ inch thick.....	25	8.50
24	Heavy Driving Belts up to ½ inch thick.....	25	10.00

SMITH'S PATENT BELT FASTENERS

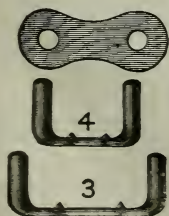


Fig. 335C

No.	Use for	Per Box of 100
1	All Heavy Belts.....	\$2.00
2	Cotton Belts.....	1.75
3	All Rubber Belts, excepting 5- and 6-ply.....	1.50
4	All Leather Belts, excepting Large Drive.....	1.25

Combination Punch for same.....each \$1.25
Reamers..... " .35

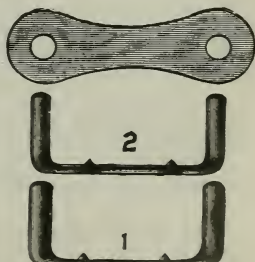


Fig. 335D

WE CAN FURNISH PROMPTLY ANY BELT FASTENER NOT SHOWN IN THIS CATALOG

CRESCENT BELT FASTENERS



NOTE: Strain is equally distributed across entire width, thus maintaining maximum strength of the belt.
No waste of belting and no bulk.

Acknowledged by belting authorities as the safest, strongest, most durable and most economical means yet devised for the joining of all power transmitting and conveying belting.

Crescent Plates are attached with Crescent Rivets which are self-piercing and merely separate the length-wise fibres of a belt, the prongs of which when clinched actually reinforce the belt at the joint. No holes are punched to weaken the belt. When necessary to shorten a belt due to stretch, simply remove Crescent Rivets from one end of a Crescent Plate, cut out the slack and rejoin at the small cost of a row of new Crescent Rivets.

Adapted to all makes of belting of every length, width and thickness.

To insure entirely satisfactory service select correct sizes of Crescent Plates and Crescent Rivets for your work as follows:

For Light Work—on 3 inch or larger Pulleys. Belts: $\frac{3}{4}$ to 3 inches wide use Crescent Short Grip Plates.	
No. 25 Crescent Plate will cover $\frac{3}{4}$ and 1 inch of belt width.....	per gross \$ 2.88
No. 45 Crescent Plate will cover $1\frac{1}{2}$ inches of belt width.....	" 5.76
No. 65 Crescent Plate will cover 2 inches of belt width.....	" 8.64
No. 85 Crescent Plate will cover $2\frac{1}{2}$ inches of belt width.....	" 11.52
No. 805 Crescent Plate will cover 3 inches of belt width.....	" 11.52
For General Work—on 6 inches or larger Pulleys. Belts: 2 to 8 inches wide use Crescent Medium Grip Plates.	
No. 67 Crescent Plate will cover $1\frac{1}{2}$ inches of belt width.....	per gross \$ 8.64
No. 607 Crescent Plate will cover 2 inches of belt width.....	" 8.64
No. 87 Crescent Plate will cover $2\frac{1}{2}$ inches of belt width.....	" 11.52
No. 107 Crescent Plate will cover 3 inches of belt width.....	" 14.40
No. 127 Crescent Plate will cover $3\frac{1}{2}$ inches of belt width.....	" 17.28
No. 147 Crescent Plate will cover 4 inches of belt width.....	" 20.16
For General Work—on 9 inches or larger Pulleys. Belts: 2 to 12 inches wide use Crescent Special Grip Plates.	
No. 63 Crescent Plate will cover 2 inches of belt width.....	per gross \$ 11.52
No. 83 Crescent Plate will cover $2\frac{1}{2}$ inches of belt width.....	" 14.40
No. 103 Crescent Plate will cover 3 inches of belt width.....	" 17.28
No. 123 Crescent Plate will cover $3\frac{1}{2}$ inches of belt width.....	" 20.16
For Heavy Work—on 12 inches or larger Pulleys. Belts: 5 to 36 inches wide use Crescent Long Grip Plates.	
No. 109 Crescent Plate will cover $2\frac{1}{2}$ inches of belt width.....	per gross \$ 17.28
No. 149 Crescent Plate will cover 3 inches of belt width.....	" 23.04
No. 1409 Crescent Plate will cover $3\frac{1}{2}$ inches of belt width.....	" 25.92
No. 189 Crescent Plate will cover 4 inches of belt width.....	" 28.80

CRESCENT LARGE SHANK RIVETS

For attaching Crescent Short, Medium, Special and Long Grip Plates. Select these Rivets $\frac{1}{8}$ inch longer than thickness of belting to allow for thickness of Plate and proper clinch.

Size	inches	5/16	6/16	7/16	8/16	9/16	10/16	11/16	12/16	13/16	14/16
Price	per gross	.70	.70	.80	.80	.90	.90	1.00	1.00	1.10	1.10

A Crescent Rivet Holder is included in each gross box of Crescent Large Shank Rivets.

For Special Light Work at High Speed Use Crescent HIGH-SPEED Plates

Crescent High-Speed Plates are for joining belts used for Light Work at High Speed.

See that both ends of the belt to be joined are cut square and true; this will ensure a perfect butt joint. Be careful in making joints, for a Crescent Joint properly made will outlast the life of the belt itself.

CRESCENT SMALL SHANK RIVETS

For attaching Crescent High-Speed Plates should be used $3/16$ inch longer than thickness of belt to allow for thickness of plate and proper clinch.

Size	inches	5/16	6/16	7/16	8/16	9/16	10/16
Price	per gross	.50	.50	.55	.55	.60	.60

For Extremely Heavy Work Use Crescent JUMBO Plates

Crescent Jumbo Plates are for extremely heavy work, large belts on long drives. This type of Crescent Belt Fastener is used on the longest and heaviest belts known, giving the most satisfactory service. They conform to the circumference of pulleys 24 inches or larger in diameter. This style is not recommended for belts running at high speed, except where very large pulleys are used.

These plates have zigzag holes, triples rows and are strong enough to hold ANY belt.

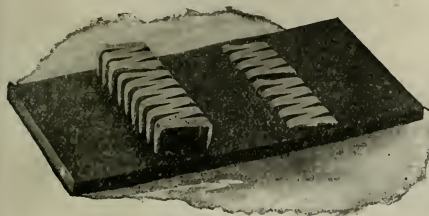
No. 1611. Will cover 3 inches of belt width.....	per gross	\$28.80
No. 2211. Will cover 4 inches of belt width.....	"	34.56

CRESCENT JUMBO RIVETS

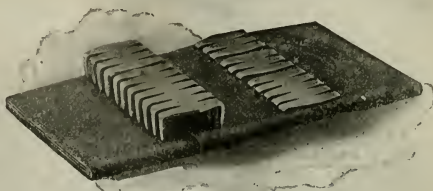
For attaching Crescent Jumbo Plates should be used $5/16$ inch longer than thickness of belt to allow for thickness of plate and proper clinch.

Size	inches	10/16	11/16	12/16	13/16	14/16	15/16	16/16	18/16
Price	per gross	1.25	1.40	1.40	1.55	1.55	1.70	1.70	1.85

BRISTOL'S PATENT STEEL BELT LACING



No. 1



No. 11

Size No. 1 has a very short back, thus making the joint suitable for use on extra small pulleys. Used very extensively for joining single leather belts, and has given wonderfully satisfactory results.

No. 1 STYLE (ASSORTED WIDTHS)

Packed regularly in assorted widths, but will also be furnished packed to order, all one width, if so specified. Each box contains enough to lace 100 inches in width of belts. Price per box 100 ins.

This Style for LEATHER Belts

Size No. 00.	For split leather and extra light belts from $\frac{1}{8}$ to $\frac{1}{4}$ inch thick.....	\$1.00
Size No. 0.	For split leather and light belts from $\frac{1}{4}$ to $\frac{3}{8}$ inch thick.....	1.00
Size No. 1.	For ordinary single leather belts from $\frac{3}{8}$ to $\frac{1}{2}$ inch thick.....	1.50
Size No. 2.	For extra heavy and wide single leather belts, $\frac{1}{2}$ to $\frac{3}{4}$ inch thick.....	2.00
Size No. 3.	For double leather belts from $\frac{3}{8}$ to $\frac{1}{2}$ inch thick.....	2.50
Size No. 4.	For heavy double leather belts from $\frac{1}{2}$ to $\frac{3}{4}$ inch thick.....	3.00
Size No. 5.	For extra heavy double leather belts from $\frac{3}{4}$ to $\frac{1}{2}$ inch thick.....	3.50

No. 11 STYLE (ASSORTED WIDTHS)

Size No. 11 is extensively used for fastening woven and rubber belts. It will be noted from the illustration that this style of Bristol Lacing is so designed that the points enter the belt well back from the joint, thus firmly holding the ends of belt without tearing out.

Packed regularly in assorted widths, but will also be furnished packed to order, all one width if so specified. Each box contains enough to lace 100 inches in width of belts. Price per box 100 ins.

This Style for WOVEN Belts

Size No. 11.	For three-ply rubber and cotton belts from $\frac{1}{8}$ to $\frac{1}{4}$ inch thick.....	\$1.50
Size No. 12.	For four-ply rubber and cotton belts from $\frac{1}{4}$ to $\frac{3}{8}$ inch thick.....	2.00
Size No. 13.	For five-ply rubber and cotton belts from $\frac{3}{8}$ to $\frac{1}{2}$ inch thick.....	2.50
Size No. 14.	For six-ply rubber and cotton belts from $\frac{1}{2}$ to $\frac{3}{4}$ inch thick.....	3.00
Size No. 15.	For seven-ply rubber and cotton belts from $\frac{3}{4}$ to $\frac{1}{2}$ inch thick.....	3.50
Size No. 17.	For eight-ply and extra double heavy rubber and cotton belts from $\frac{1}{2}$ to $\frac{3}{4}$ inch thick.....	4.95

STAGGERED POINT STYLE (ASSORTED WIDTHS)

The staggered point style is suitable for general use on both leather and woven belts. The staggered points enter the belt in double rows.

Packed regularly in assorted widths, but will also be furnished packed to order, all one width, if so specified. Each box contains enough to lace 100 inches in width of belt. Price per box 100 ins.

This Style for ALL KINDS OF Belts

Size No. 110.	For all kinds of belts from $\frac{1}{4}$ to $\frac{3}{8}$ inch thick. Split leather and light rubber and cotton belts. Packed in assorted widths.....	\$1.00
Size No. 111.	For all kinds of belts from $\frac{1}{4}$ to $\frac{1}{2}$ inch thick. Ordinary single leather belts and three-ply rubber and cotton belts. Packed in assorted widths.....	1.50
Size No. 112.	For all kinds of belts from $\frac{1}{4}$ to $\frac{1}{2}$ inch thick. Extra heavy and wide single leather belts and four-ply rubber and cotton belts. Packed in assorted widths.....	2.00
Size No. 113.	For all kinds of belts from $\frac{1}{4}$ to $\frac{3}{8}$ inch thick. Double leather belts and five-ply rubber and cotton belts. Packed in assorted widths.....	2.50
Size No. 114.	For all kinds of belts from $\frac{3}{8}$ to $\frac{1}{2}$ inch thick. Heavy double leather belts and six-ply rubber and cotton belts. Packed in assorted widths.....	3.00
Size No. 115.	For all kinds of belts from $\frac{1}{2}$ to $\frac{3}{4}$ inch thick. Extra heavy double leather belts and seven-ply rubber and cotton belts. Packed in assorted widths.....	3.50
Size No. 117.	For all kinds of belts from $\frac{1}{2}$ to $\frac{3}{4}$ inch thick. Conveyor belts and eight-ply and extra double heavy rubber and cotton belts. Packed in assorted widths.....	4.95
Size No. 119.	For all kinds of belts from $\frac{3}{4}$ to $\frac{1}{2}$ inch thick. Ten-ply and extra heavy conveyor belts. Packed only in 3-point widths.....	6.05

STAGGERED POINT STYLE (3-POINT WIDTHS ONLY)

Packed in 3-point widths, including the two forms of hook (i. e., both long side pieces and short side pieces). Each box contains 50 pieces 3-point widths. Price per box 50 pieces

This Style for ALL KINDS OF Belts

Size No. 312.	For all kinds of belts from $\frac{1}{4}$ to $\frac{3}{8}$ inch thick. Extra heavy and wide single leather belts and four-ply rubber and cotton belts. Packed in 3-point widths only.....	\$1.10
Size No. 313.	For all kinds of belts from $\frac{1}{4}$ to $\frac{1}{2}$ inch thick. Double leather belts and five-ply rubber and cotton belts. Packed in 3-point widths only.....	1.70
Size No. 314.	For all kinds of belts from $\frac{3}{8}$ to $\frac{1}{2}$ inch thick. Heavy double leather belts and six-ply rubber and cotton belts. Packed in 3-point widths only.....	2.30
Size No. 315.	For all kinds of belts from $\frac{1}{2}$ to $\frac{3}{4}$ inch thick. Extra heavy double leather belts and seven-ply rubber and cotton belts. Packed in 3-point widths only.....	3.50
Size No. 317.	For all kinds of belts from $\frac{1}{2}$ to $\frac{3}{4}$ inch thick. Conveyor belts and eight-ply and extra double heavy rubber and cotton belts. Packed in 3-point widths only.....	5.50
Size No. 319.	For all kinds of belts from $\frac{3}{4}$ to $\frac{1}{2}$ inch thick. Ten-ply and extra heavy conveyor belts. Packed in 3-point widths only.....	9.00



ALLIGATOR STEEL BELT LACING

"JUST A HAMMER TO APPLY IT"

A strong, smooth hinge joint for any width or kind of belting.

Packed Complete with Gauge and Hinge Pins

Lacing Size	Thickness and Kind of Belting	To Join in Width inches	Lacing Section inches	Price per Box
00	For printers or other tape belt not over $\frac{1}{16}$ in. thick.....	72	6	\$1.00
15	For light narrow single leather or fabric, $\frac{1}{8}$ to $\frac{3}{16}$ in. thick.....	64	8	1.15
20	For single leather, 3-ply fabric, etc., up to $\frac{3}{16}$ in. thick.....	60	12	1.15
F25	For single leather and fabric belts, $\frac{3}{16}$ to $\frac{1}{4}$ in. thick.....	48	8	1.15
G25	For single leather and fabric belts, $\frac{3}{16}$ to $\frac{1}{4}$ in. thick.....	96	12	2.25
L27	For light double leather and fabric belts, $\frac{1}{4}$ to $\frac{3}{8}$ in. thick.....	96	12	2.50
M35	For double leather and fabric belts, $\frac{3}{8}$ to $\frac{1}{2}$ in. thick.....	32	8	1.15
N35	For double leather and fabric belts, $\frac{3}{8}$ to $\frac{1}{2}$ in. thick.....	48	12	1.70
U45	For heavy double leather and fabric belts, $\frac{1}{2}$ to $\frac{3}{4}$ in. thick.....	48	12	2.25
U55	For rubber, cotton or balata, $\frac{3}{8}$ to $\frac{1}{2}$ in. thick.....	48	12	2.60
X65	For rubber, cotton or balata, $\frac{1}{2}$ to $\frac{3}{4}$ in. thick.....	48	12	3.00
75	For rubber, cotton or balata, $\frac{1}{2}$ to $\frac{3}{4}$ in. thick.....	48	12	4.00

Nos. 00 and 15 are packed only with rawhide hinge pins, Nos. 20, 25, 27, 35 and 45 are packed regularly with rawhide pins and one sample rocker pin. Sectional steel "Rocker" pins only are furnished for Nos. 55, 65 and 75.

CLING-SURFACE BELT DRESSING

Cling-Surface is not a sticky belt dressing, not a belt dressing at all, in fact, but a special treatment for special results.

It penetrates into porous belts and ropes, making and keeping them pliable, firm and waterproof all through and leaving the surface clean, so the whole belt grips the pulley and is in best health always.

It stops all slipping without stickiness, so every belt can be run easy or slack, as shown in cut, with minimum friction and maximum output, saving oil, power, time, work and worry and fuel.

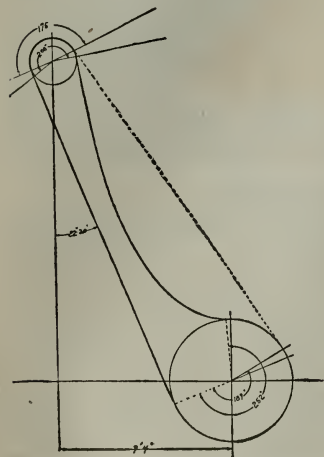
It can be used for all sorts of belts and ropes and will preserve leather, cotton, camel hair and manila belts and ropes and will not injure good rubber or balata if properly used. It is being used widely in almost every manufacturing country, and you will find it to give you the results you want.

Price per pound\$0.60

PEERLESS BELT GLUE

Price per pound\$1.00

Directions:—To prepare the Cement for use, cut in small pieces. Set in boiling water, which will dissolve it. If too thick, add small quantity of water. Apply with brush lightly to laps of belt and stick together before cement becomes chilled. Rub lap down thoroughly and let it set an hour before running belt.



"OLD DUTCH" RUBBER CEMENT

Half pint cans.....	per doz. \$ 3.60
Pint cans	" 7.20
Quart cans	" 14.40
One gallon cans.....	each 4.00

DIXON'S LEA. BELT DRESSING

Prevents Slipping. Increases Power

1 lb. Sticks, 25 to case.....	per case \$7.50
1 lb. Sticks	each .40

COMET BELT DRESSING

Our Own Manufacture

An unusually high grade leather and rubber belt dressing.

Price per pound\$0.60

STEPHENSON'S BELT DRESSING

In 1 lb. sticks.....each \$2.50

"Old Colony" SHEET PACKING

A Reliable Packing
for Many Uses

Our Reputation and
Experience are
Back of
"Old Colony"



"Old Colony" is the result of years of experience in selling sheet packings made by the largest producer of this material in the world.

Before introducing "Old Colony" Sheet Packing, we specified the ingredients in its compound, so as to make it suitable for any duty that a sheet packing of this kind is expected to perform.

After a great number of exhaustive tests, under steam, hot and cold water and air pressures, we have passed and recommended "Old Colony" to give you satisfactory service for pressures up to 125 pounds or we will issue credit.

The distinctive features of "Old Colony" Sheeting Packing are:

- It is made up of more good rubber.
- It does not harden in stock when not in use.
- It weighs less to the square yard.
- It requires no following up at the joints.
- It is the cheapest packing in the end.
- It saves you Sunday work.

A trial order will bear us out.

Carried in stock in 100-lb. rolls in the following thicknesses, all 36 inches wide: $\frac{1}{32}$ inch, $\frac{1}{16}$ inch, $\frac{1}{8}$ inch, $\frac{1}{4}$ inch, $\frac{3}{8}$ inch and $\frac{1}{2}$ inch.

It is natural for every dealer or manufacturer to claim his packing the best. We believe that the best proof of any packing is a practical test, and will send enough "Old Colony" upon request to enable you to convince yourself that it is all we claim it to be.

PACKING

"BANNER"**SUPERHEAT SHEET PACKING**

For Highest Temperatures and Pressures

Banner Superheat Sheet Packing is made of a combination of carefully selected long asbestos fiber and rubber. It is built to withstand the highest temperatures and pressures up to 900 lbs. per square inch. It is particularly adapted to use with superheated and saturated steam, ammonia, alkali and acids. For all high pressure joints—cylinder and steam chest covers and the like—Banner Superheat can be depended upon. It can be excelled by no other high pressure packing on the market.

SIX SUPERIORTIES

1. Thinner sheets—more joints to the pound.
2. Tensile strength over 3000 pounds.
3. No ply separation—joints break clean.
4. Smooth surface—absolutely tight joint.
5. Tested to 1200 and 900 pounds.
6. Joint remains permanently tight—vibration has no effect.

Banner Superheat is made plain or graphited in sheets 50x50 inches, and in thicknesses of $\frac{1}{16}$, $\frac{1}{8}$ or $\frac{1}{4}$ inch. The weight of the $\frac{1}{8}$ inch thickness is about 5½ pounds per square yard. Free samples for testing upon request.

Price.....per lb. \$1.25

**RAINBOW SHEET PACKING**

Carried in stock in 100 and 200 pound rolls in $\frac{1}{32}$, $\frac{1}{16}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ inch thicknesses.

All rolls 36 inches wide. Extra widths 10% additional.

Wire inserted carried in stock in $\frac{1}{8}$ and $\frac{1}{4}$ inch thickness.

We can also furnish the following popular brands of sheet packing.

Ebonite	Usudurian	Jenkins' 96
Garlock 900	Ekonomy	Kearsarge
		Permanite

**KAPLAN RED AND BLACK PACKING**

Graphite One Side, Red Lead One Side

This packing is made from asbestos yarn and metallic wire, firmly twisted and woven together. It will withstand high pressure and is sufficiently elastic to compensate for expansion and contraction. Carried in stock in 200 pound rolls, in $\frac{1}{8}$ and $\frac{1}{4}$ inch thickness.

Price.....per lb. \$1.00

PURE GUM SHEET PACKING

Pure gum sheet packing is made from the better quality of compound, and is recommended for cold water packing and squeegee rubbers. The standard sheets are 36 inches wide and can be had in thicknesses ranging from $\frac{1}{32}$ to $\frac{3}{4}$ inch, inclusive. Rolls contain either 100 or 200 lbs.

This packing varies in price from 30 cents to \$1.00 per pound, depending on the quality of the rubber in the packing.

ALL WHITE ASBESTOS SHEET PACKING

For High Pressures and Temperatures

Especially adapted to the highest pressures and temperatures in connection with gas and gasoline engines, turbines, steel plant equipment, etc.

Made of long fibre asbestos yarn interwoven with wire insertion, and covered with a heat resisting compound which will withstand severe contraction and expansion.

Standard rolls 36 inches wide, contain about 100 and 200 pounds. Thickness, $\frac{1}{32}$, $\frac{1}{16}$ and $\frac{1}{4}$ inch.

Price.....per lb. \$1.00

CLOTH INSERTION SHEET PACKING

C. L., C. O. S. and C. B. S.

A popular style of packing for cold water and low pressures.

The grades we carry combine smoothness of finish, strength of cloth insertion and pliability. We stock it in thicknesses from $\frac{1}{32}$ to $\frac{1}{4}$ inch, inclusive. Each cloth, whether an insertion or on the outside, counts as one ply. Prices on application.

SUNSHINE GASKETS

THE NEW IDEA



Fig. 891A

An Asbestos Tubular Tape that enables you to make your own Asbestos Gaskets. Keep it on hand. It saves Money, saves Time, saves Trouble and makes you independent of the Factory.

DIRECTIONS: Cut off enough tape to go around the flange of opening you want to pack. Attach the ends together with the copper fasteners furnished, sponge off about two inches at the joint with gasoline, wind with the adhesive tape, also furnished, and your Gasket is finished. Simple, isn't it? Packed in boxes containing 5 to 6 pounds. Price per lb. \$1.25

BANNER SUPERHEAT GASKETS



Fig. 891B

Made of the same material as our Banner Superheat sheet packing.

They are acid, ammonia and oil proof to the highest degree and particularly adaptable for all service having highest pressures and superheated steam.

In all sizes and shapes, $\frac{1}{32}$, $\frac{1}{16}$ and $\frac{1}{8}$ inch thick.

Price on application.

C. I. OR C. B. S. GASKETS



Fig. 891C

C. I. or C. B. S. Gaskets, made in three grades, are of the highest quality rubber compound and possess great durability.

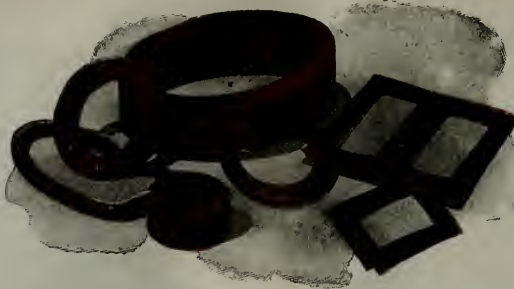
Each layer of cloth, whether it is inserted, or on the outside, counts as one ply—one to each $\frac{1}{16}$ inch thickness. Brass or steel wire insertion if desired.

Most dependable and satisfactory for cold water service and low pressure steam packing. In all sizes, shapes and thicknesses.

When special shapes are required send blue print or sketch giving full information.

Prices on application.

We can also furnish for prompt shipment, at prevailing market prices: Eclipse Sectional Rainbow Gaskets, Ebonite Gaskets, Plain White Wire Inserted Gaskets, Kearsarge, Permanite, Rainbesto, Rainbow, Rainbow Wire Inserted, Heine Boiler Handhole, Heine Boiler Manhole.

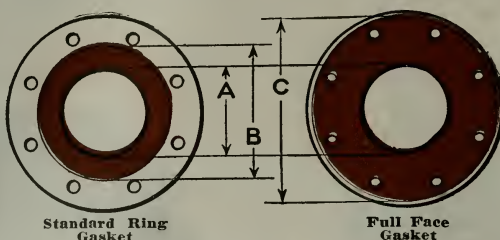


"Old Colony" GASKETS

"Old Colony" Gaskets are made from "Old Colony" Sheet Compound, therefore possess the same features and quality. They readily conform to the roughest faced flanges, neither blow nor squeeze out and will successfully withstand high pressure in connection with air, steam and water service. For any air, steam or water joint and in all sizes, shapes and thicknesses.

"Old Colony" Brass Wire Mesh Insertion or Cloth Insertion, are also made in all sizes, shapes and thicknesses. Possessing great flexibility and toughness, they are most effective and efficient for all high pressure service, especially marine, and for packing joints subjected to vibrations and shocks such as on threshing engines, road machinery, etc.

Rainbow Gaskets. Prices on application.



Standard Ring
Gasket

Full Face
Gasket

PRICES AND WEIGHTS

								Plain	Wire or Cloth Inserted
								per lb.	
3/16 inch thick								\$1.40	
to 1/8 inch thick								1.30	\$2.50
1/8 to 1/4 inch thick								1.10	2.00

Weight of Standard Ring Gasket 1/16 in. Thick								Weight of Full Face Gasket 1/16 in. Thick							
A.	B.	Lbs.	Ozs.	A.	B.	Lbs.	Ozs.	A.	C.	Lbs.	Ozs.	A.	C.	Lbs.	Ozs.
3/4 x 2 1/4	..	3 1/4	16x20 1/4	..	8 1/2	3 1/4 x 3 1/4	..	3 1/4	16x23 1/2	1	1 1/2	30x38 3/4	2	4	4
1 x 2 1/2	..	3 1/2	18x21 1/4	..	8	4 x 4	..	1	18x25	1	1	32x41 1/2	2	10	10
1 1/4 x 2 3/4	..	3 3/4	20x23 1/4	..	10	1 1/4 x 4 1/2	..	1 1/4	20x27 1/2	1	5	34x43 1/2	2	13	13
1 1/2 x 3	..	4	22x26	..	11	1 1/2 x 5	..	1 1/2	22x29 1/2	1	7	36x45 1/2	3	..	..
2 x 4	..	4 1/2	24x28 1/4	..	13	2 x 6	..	2	24x32	1	11	40x50 1/2	3	9	9
2 1/4 x 4 1/4	..	5	26x30 1/4	..	15	2 1/2 x 7	..	2 1/2	26x34 1/4	1	14	42x52 1/2	3	15	15
3 x 5	..	5 1/2	28x32 1/4	1	1 1/2	3 x 7 1/2	..	3	28x36 1/2	2	1	44x55 1/4	4	5	5
3 1/2 x 6 3/4	..	6 1/2	30x34 3/4	1	2	3 1/2 x 8 1/2	..	3 1/2	30x38 3/4	2	4	46x57 1/4	4	8	8
4 x 6 3/4	..	7	32x37 1/4	1	5	4 x 9	..	4	32x41 1/2	2	10	48x59 1/2	4	11	11
4 1/2 x 7	..	7 1/2	34x39 1/4	1	6 1/2	4 1/2 x 9 1/4	..	4 1/2	34x43 1/2	2	13	50x61 1/4	5	1	1
5 x 7 3/4	..	8 1/2	36x41 3/4	1	8	5 x 10	..	5	36x45 1/2	3	..	..	..	..	..
6 x 8 3/4	..	9 1/2	38x43 3/4	1	11	6 x 11	..	6	38x48 1/2	3	..	..	..	..	..
7 x 10	..	10 1/2	40x45 3/4	1	12 1/2	7 x 12 1/4	..	7	40x50 1/2	3	9	..	..	..	..
8 x 11	..	11 1/2	42x48	2	1	8 x 13 1/2	..	8	42x52 1/2	3	15	..	..	..	..
9 x 12 1/2	..	12 1/2	44x50 1/4	2	4	9 x 15	..	9	44x55 1/4	4	5	..	..	..	..
10 x 13 1/4	..	13 1/2	46x52 1/4	2	5 1/2	10 x 16	..	10	46x57 1/4	4	8	..	..	..	..
12 x 16	..	16	48x54 1/2	2	8 1/2	12 x 19	..	12	48x59 1/2	4	11	..	..	..	..
14 x 17 3/4	..	17 1/2	50x56 3/4	2	11 1/2	14 x 21	..	14	50x61 1/4	5	1	..	..	..	..
15 x 19	..	19	..	..	..	15 x 22 1/4	1	15	..	..	..	..	..	..	..

TABLE GIVES APPROXIMATE WEIGHTS ONLY

EKONOMY SPIRAL AND RING PACKING



Designed for general use on steam (except pressures above 125 pounds, and for superheated steam), water, air, etc. In fact it can be used wherever a reliable packing is required.

Cut to exact measurement, and is quickly and easily applied. Elastic and durable. Made in any diameter, thickness or shape of ring. The spiral is carried in stock. The ring in solid and sectional is furnished to order only.

In ordering give exact diameter of rod, and inside diameter of stuffing box.

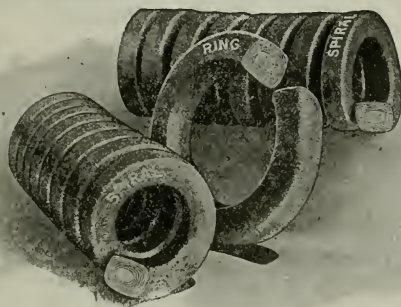
Packed in boxes as follows:

Size, inches	Feet	Weight, lbs.	Size, inches	Feet	Weight, lbs.
$\frac{3}{16}$	72	2 $\frac{1}{4}$	$\frac{3}{16}$	36	7 $\frac{1}{2}$
$\frac{1}{4}$	48	2 $\frac{1}{2}$	$\frac{5}{8}$	36	8 $\frac{3}{4}$
$\frac{3}{8}$	36	3 $\frac{1}{2}$	$\frac{3}{4}$	24	8
$\frac{7}{16}$	36	5	$\frac{7}{8}$	24	12
$\frac{1}{2}$	36	6	1	24	15

Table gives approximate weights in Spiral form.

BANNER HIGH PRESSURE SPIRAL ASBESTOS PACKING

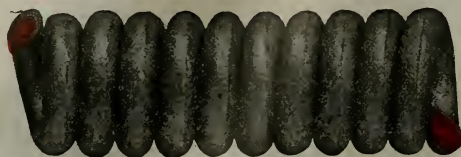
For High Pressure and Superheated Steam



Unsurpassed for all conditions of service under extremely high pressure and with superheated steam, also in connection with acids, greases and oils. Especially suitable for all types of high pressure steam and gas engines, turbines, air compressors, marine and railroad service, steel plant equipment.

In ordering rings, state diameter of rod, outside diameter of gland, depth of stuffing box and number of rings required. Also advise style of packing wanted.

SPIRAL PISTON AND VALVE ROD PACKING



"Old Colony" Packing for piston and valve rods. "Old Colony" is not equalled by any other rod packing.

The core is surrounded by a superior quality duck thoroughly impregnated with graphite. The lubricant is of the purest and highest grade free from metallic and other substances of a harmful nature.

It is compounded to withstand high temperature, will not harden nor disintegrate, and will retain its life and elasticity indefinitely.

"Old Colony" Piston and Valve Rod Packing is as near perfection as is possible to make such and it will successfully and efficiently pack any rod under any condition of service excepting in connection with superheated steam.

Especially efficient for rods of pistons and valves that must move suddenly or intermittently.

Can be furnished in round or square style. State kind wanted.

In coil, spiral or ring form as desired. When ordering ring style state diameter of rod, outside diameter of gland, depth of stuffing box or number of rings required.

"Old Colony" PISTON AND VALVE ROD PACKING

Round Section

TABLES OF SIZES AND APPROXIMATE WEIGHTS

Packed in Boxes as Follows:

COIL

Size inches	Feet	Weight lbs.	Size inches	Feet	Weight lbs.
1/8	120	1 1/4	15/16	12	4 1/2
3/16	108	1 1/2	1	12	4 3/4
1/4	96	3 1/4	1 1/16	12	5 1/4
5/16	72	3 1/2	1 1/8	12	6
3/8	54	3 1/4	1 3/16	12	6 1/4
7/16	54	4	1 1/4	12	7 1/2
1/2	36	3 3/4	1 5/16	12	8 1/2
9/16	36	4 3/4	1 3/8	12	9
5/8	36	6 3/4	1 7/16	12	9 3/4
11/16	18	4 1/4	1 1/2	12	11
3/4	18	4 1/2	1 5/8	12	13 1/2
13/16	12	3 1/4	1 3/4	12	15 1/2
7/8	12	4	2	12	18 1/2

SPIRAL

Size inches	Feet	Weight lbs.	Size inches	Feet	Weight lbs.
1/8	120	1 1/4	15/16	24	9
3/16	108	1 1/2	1	24	10
1/4	84	3 1/4	1 1/16	12	5 1/2
5/16	72	3 3/4	1 1/8	12	5 3/4
3/8	72	4 1/2	1 3/16	12	6 1/4
7/16	60	5	1 1/4	12	7 1/2
1/2	36	4	1 5/16	12	8 1/2
9/16	36	5	1 3/8	12	9
5/8	36	7	1 7/16	12	9 3/4
11/16	24	5	1 1/2	12	11
3/4	24	5 3/4	1 5/8	12	13 1/2
13/16	24	7	1 3/4	12	15 1/2
7/8	24	7 3/4	2	12	18 1/2

PEERLESS PISTON AND VALVE ROD PACKING

For those who prefer we can ship promptly any of the Peerless piston and valve rod packings, made of Rainbow quality compounds, at prevailing market prices.

CANVAS HYDRAULIC PUMP PACKING



PEERLESS SPECIAL

Peerless Special Canvas Pump Packing is strictly of the highest grade, being made of a fine and closely woven duck frictioned with a white rubber compound.

To meet the different service requirements it is made in the following degrees of hardness—Rock Hard and Medium.

Rock Hard is vulcanized to withstand the higher temperatures, being especially adaptable for hot water service such as packing hot water pumps. This grade will not soften nor lose its efficiency under the most severe conditions. Also highly effective for very heavy hydraulic work.

Medium is particularly for cold water service such as packing cold water pumps, elevator plungers and rams.

In coil or ring form as desired.

When ordering rings, state diameter rod, outside diameter gland, depth of stuffing box or number of rings required.

List price per pound. \$1.00

CHALLENGE HYDRAULIC PUMP PACKING

This packing is made of a high grade duck, and frictioned with a good grade of compound.

It is particularly adapted for conditions not quite so severe as those for which we recommend Peerless Special, and will give the utmost satisfaction under practically any working conditions.

List price per pound. \$0.70

The Peerless and Challenge Packings listed on this page are packed in boxes as follows:

Size inches	Feet	Weight lbs.	Size inches	Feet	Weight lbs.	Size inches	Feet	Weight lbs.	Size inches	Feet	Weight lbs.
1/4	25	1	9/16	25	5	7/8	25	12 1/4	1 3/16	25	23
5/16	25	1 5/8	5/8	25	6 1/2	15/16	25	13 3/4	1 1/4	25	25
3/8	25	2 1/4	11/16	25	7 1/2	1	25	15 3/4	1 3/8	25	29 3/4
7/16	25	3 1/8	3/4	25	9	1 1/16	25	18 1/2	1 1/2	25	35
1/2	25	4	13/16	25	10 3/4	1 1/8	25	21 1/2	.....	..	....

TUCK'S PACKING

Square, Round and Rubber Back

This well known form of packing is used so universally that no detailed description is required. Our Tuck's packing is made of a close woven duck, frictioned with black rubber compound. The quality is of the highest and the packing is adaptable to the most severe hydraulic service of all kinds. Furnished in 25 foot lengths (coils).

Price per pound. \$0.50

"Old Colony" SQUARE BRAIDED FLAX PACKING

Coil Form



This packing is most satisfactory and durable for cold water pump plungers, hydraulic presses, elevator plungers, steam glands, accumulators, etc., where a highly dependable packing of this nature is required.

Made from the best grades of long fibre flax. Braided solid and contains neither jute nor hemp. The compound with which it is impregnated contains no foreign ingredients nor grit, and is of the proper amount to insure the most satisfactory service.

This packing is one of the first we ever sold, and has been standard for over thirty years. It is our best grade and is so sold to anyone who wants a first class, square flax packing.

Price, per pound..... \$1.00

Can be furnished in reels if desired.

Size inches	Feet	Weight lbs.	Size inches	Feet	Weight lbs.
$\frac{1}{4}$	184	$6\frac{1}{4}$	$1\frac{1}{4}$	33	14
$\frac{3}{8}$	100	$6\frac{7}{8}$	$1\frac{1}{2}$	30	14
$\frac{1}{2}$	61	$6\frac{7}{8}$	$1\frac{1}{2}$	27	$15\frac{3}{4}$
$\frac{5}{8}$	70	$8\frac{1}{4}$	$1\frac{3}{4}$	25	17
$\frac{3}{4}$	27	$6\frac{1}{2}$	$1\frac{3}{4}$	22	18
$\frac{7}{8}$	20	7	$1\frac{3}{4}$	$20\frac{1}{2}$	20
1	17	$8\frac{1}{4}$	2	19	22
$1\frac{1}{8}$	17	9			

TUEX SQUARE BRAIDED FLAX PACKING

Of the same general construction as our Old Colony brand, except that the fibre is a little shorter. The process of manufacture is identical with our other grade.

Tuex is suitable for work under ordinary conditions.

Price, per pound..... \$0.75

"BANNER" ASBESTOS VALVE STEM PACKING

Twisted and Braided

For air pumps, air brakes, throttles, radiators and other small valve stems.

Made of pure long fibre asbestos, perfectly lubricated with our own compound, making it flexible, soft and very strong. It will neither harden nor work injury to valve stems. Resists highest temperatures and pressures.

Both the twisted and braided are put up on 1-pound metal spools. Furnished in reel form in any quantity desired. Sizes from $\frac{1}{16}$ -inch up, advancing by 16ths.

Price, per pound..... \$1.50



MISCELLANEOUS PACKINGS—AUTOMOBILE TIRES

In addition to the extensive line of packings listed on the preceding pages, we carry in stock a great many of the advertised brands.

Space does not permit full descriptions of all the following packings, but each one listed is a well known brand. If your favorite is neither on the other pages nor on this page, kindly advise us and we will furnish any information concerning it.

Arctic Ammonia

3792 Ammonia

Asbestos Metallic

Air Pump and Throttle Valve

Crandall's

Dale's High Pressure Steam Trap

Eureka Gum Core

Empire Gum Core

Garlock Spiral and Ring Packings

Goodsell's

Honest John Hydraulic

Hercules Combination Stop Valve

Lakeside Spiral

Mabb's Rawhide

Metalbestos

P. P. P.

P. P. P. Special

P. P. P. Marine

Peerless, all styles

Permanite

Palmetto

Rainbow

Rainbesto

Success

Selden's Canvas Core

Vulcanbeston

Pump Valves

AUTOMOBILE TIRES

Our experience in handling tires has been such that we are now confining our entire efforts to the Diamond and Goodyear grades, for the reason that they are both well-known makes and represented by the better manufacturers. Having a direct agency on the Diamond and Goodyear Tires, we are in a position to quote you the very best market prices prevailing at all times.

We also carry a very complete line of accessories, such as tubes, tire patches, sleeves, vulcanizing rubber inner and outer shoes.

Write for prices.



RUBBER PUMP VALVES



No other article in the mechanical rubber industry requires the practical scientific knowledge as do Pump Valves in order to be properly compounded for their many different and exacting service conditions.

The most satisfactory and proper results will be obtained by use of a pump spring with sufficient capacity only to work under the pressure, head or lift. That is, use a spring having sufficient compression only to "seat" the valve without undue pressure. See index.

VALVE SPECIFICATIONS

HOT WATER STYLES:

CONDENSER VALVES:

STYLE 334
 Stock—Extra hard.
 Service—Hot water.
 Pressure—Highest.
 Temperature—Highest.

STYLE 300
 Stock—Hard.
 Service—Hot Water.
 Pressure—Up to 200 lbs.
 Temperature—Up to 200°.

STYLE 330
 Stock—Soft gray.
 Service—Cold water.
 Pressure—Up to 110 lbs.
 Temperature—Lukewarm water.

STYLE 325
 Stock—Medium gray.
 Service—Cold water.
 Pressure—Up to 150 lbs.
 Temperature—Cold water only.

STYLE 345
 Stock—Soft, red.
 Service—Condenser.
 Quality—Soft, tough, light weight. Fine Para valve.

STYLE 355
 Stock—Soft, red.
 Service—Condenser.
 Quality—One of the best condenser valves made.

COLD WATER STYLES:

STYLE 320
 Stock—Medium hard, gray.
 Service—Cold water.
 Pressure—Up to 160 lbs.
 Temperature—Cold and lukewarm water.

STYLE 324
 Stock—Hard and tough.
 Service—Cold water.
 Pressure—Up to 400 lbs.
 Temperature—Cold water only.

AIR AND VACUUM STYLES:

STYLE 360

Stock—Soft, gray; Service—Air and vacuum; Pressure—Low; Temperature—To 200°.

SPECIAL LOW PRICED LINE

"H. W." Standard hot water valves for medium service.

"S." Soft valve for medium cold water service.

"M." Medium valve for service in cold water, pressure up to 150 lbs.

HARD RUBBER VALVE DISCS

For Russell, Frink, Walworth, Jenkins and Kelly & Jones Valves

Particularly suitable and satisfactory for use with air, acid, ammonia, gas, oil, steam, etc., also with water, either cold or hot. Will neither soften nor leak.

When ordering, be sure to state size and make of valve, service for which intended, and whether the round or the oblong hole is required.

SIZES AND PRICES

Size	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5
Price	.03	.04	.04	.05	.06	.09	.12	.18	.24	.40	.50	.60	.70	.80

Size	6	7	8	9	10	12	14	16	18	20	22	24
Price	1.00	1.20	1.40	1.80	2.25	2.50	3.50	4.00	5.00	6.00	7.50	9.00

LIST ON BIBB WASHERS

RAINBOW Bibb Valves are made of a compound that successfully resists Air, Acid, Gas, Cold or Hot Water.
 Packed 100 in a box as follows:

Size	3/8 in.	1/2 in.	5/8 in.	3/4 in.	7/8 in.	1 in.
Price	\$1.00	1.00	1.25	1.50	1.75	2.00

LIST PRICES OF STEAM, SUCTION AND WATER HOSE



STEAM HOSE LIST PRICES

Internal Diameter Inches	3-Ply	4-Ply	5-Ply	6-Ply	7-Ply	8-ply
$\frac{1}{2}$	\$0.47	\$0.56	\$0.70	\$0.84	\$0.98	\$1.12
$\frac{3}{4}$	.57	.71	.87	1.05	1.23	1.41
1	.70	.87	1.07	1.28	1.50	1.70
1 $\frac{1}{4}$	.85	1.04	1.30	1.56	1.82	2.08
1 $\frac{3}{4}$	.94	1.15	1.43	1.71	2.00	2.29
1 $\frac{1}{2}$	1.02	1.25	1.56	1.87	2.18	2.50
1 $\frac{3}{8}$	1.10	1.35	1.69	2.02	2.35	2.70
1 $\frac{1}{8}$	1.18	1.45	1.81	2.17	2.53	2.90
2	1.34	1.66	2.07	2.43	2.90	3.32
2 $\frac{1}{4}$	1.50	1.87	2.33	2.80	3.27	3.74
2 $\frac{3}{4}$	1.66	2.08	2.60	3.12	3.64	4.16

Air Drill Hose—Same as Steam Hose.

Brewers' Hose—Same as Steam Hose.

Oil Hose—Same as Steam Hose.

Boiler Washout Hose—Same as Steam Hose.

Hot Water Hose list one ply less than above.

 WATER HOSE LIST PRICES
 CONDUCTING, HYDRANT, AND ENGINE
 Old Colony and Sterling

Internal Diameter Inches	2 Ply	3-Ply	4-Ply	5-Ply	6-Ply	Internal Diameter Inches	2-Ply	3-Ply	4-Ply	5-Ply	6-Ply
$\frac{1}{2}$	\$0.20	\$0.25	\$0.30	\$0.37	\$0.45	3	\$0.99	\$1.20	\$1.50	\$1.87	\$2.25
$\frac{3}{4}$	.25	.30	.37	.46	.55	3 $\frac{1}{2}$	1.16	1.40	1.75	2.18	2.62
1	.33	.40	.50	.62	.75	4	1.32	1.60	2.00	2.50	3.00
1 $\frac{1}{4}$	.42	.50	.62	.77	.93	5	1.65	2.00	2.50	3.13	3.75
1 $\frac{1}{2}$	.50	.60	.75	.93	1.12	6	1.98	2.40	3.00	3.75	4.50
1 $\frac{3}{4}$	.58	.70	.87	1.08	1.30	7	2.31	2.80	3.50	4.38	5.25
2	.66	.80	1.00	1.25	1.50	8	2.64	3.20	4.00	5.00	6.00
2 $\frac{1}{4}$	.75	.90	1.12	1.40	1.68	9	2.97	3.60	4.50	5.63	6.75
2 $\frac{3}{4}$	.83	1.00	1.25	1.56	1.87	10	3.33	4.00	5.00	6.25	7.50
3	.92	1.10	1.37	1.71	2.05						

MOLDED WATER HOSE LIST PRICES

On 500 foot Reels

Inch	Two Braid per foot	Three Braid per foot
1	\$0.40	\$0.50
1 $\frac{1}{4}$	.50	.62
1 $\frac{1}{2}$	.60	.75

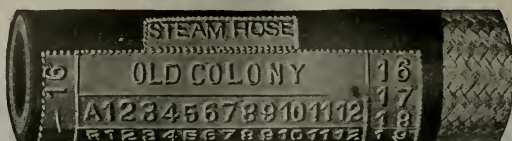
SUCTION HOSE LIST PRICES

Inch	Hard Rubber	Rough Bore	Smooth Bore	Inch	Rough Bore	Smooth Bore
$\frac{3}{4}$	\$0.65	....	....	5	\$7.60	\$8.50
1	.75	....	....	5 $\frac{1}{2}$	8.50	9.50
1 $\frac{1}{4}$	.93	....	....	6	9.50	10.50
1 $\frac{1}{2}$	1.13	\$1.50	\$1.70	6 $\frac{1}{2}$	10.50	12.00
1 $\frac{3}{4}$	1.31	1.90	2.15	7	12.00	13.50
2	1.50	2.30	2.60	7 $\frac{1}{2}$	13.50	15.00
2 $\frac{1}{4}$	1.88	3.10	3.50	8	15.00	16.50
3	....	4.00	4.50	9	17.50	19.50
3 $\frac{1}{2}$	....	4.90	5.50	10	20.00	22.50
4	....	5.80	6.50	12	25.00	27.50
4 $\frac{1}{2}$	....	6.70	7.50	..	....	....

In ordering suction hose of any kind be sure to specify whether or not the ends are to be enlarged for nipples.

Couplings up to six inches in diameter. Nipples any size. Globe or Basket Strainers with or without handles.

"Old Colony"



Under this brand and style we handle Air Drill, Brewers, Creamery, Malt, Pneumatic Tool, Sand Blast, Steam and Water Hose.

The principle of their construction is the same, namely: A combination of Braided Jacketed Yarns as the back bone, and the wrapped special duck to give it proper strength, against heavy pressures, severe handling and the greatest abuse.

These are the distinctive features of "Old Colony" Hose:

Heavy rubber cover.

Distinctive method of applying cover to hose.

Great tensile strength of braided jacket.

Best possible friction for each particular kind of hose.

Duck used is specific for each purpose.

Tubes compounded to meet conditions for which they are intended.

Which result in:

First. It is possible for "Old Colony" Hose to withstand excessive dragging over rough and jagged surfaces.

Second. Adds strength to the cover, keeping the fabric from being exposed.

Third. Gives "Old Colony" construction excessive tensile strength under pressure, flexibility and firmness.

Fourth. Is responsible for the long life and durability.

Fifth. Is necessary to conduct the material and remain intact.

Sixth. Has helped to make "Old Colony" the hose the reputation it now enjoys. The tube is the heart of any hose, and as long as it remains intact you will be able to receive service from it.

We have studied from every possible angle the uses and abuses of hose, and are able to furnish it to you on a money-saving basis.

The M. C. B. Standard type of label which is our brand on "Old Colony" is there for a purpose. It will enable you to keep an exact record of how long your hose served you.

You will note on this label at the right hand side, numbers from 16 to 19, by which you can designate the year. The numbers 1 to 12 in the first row after the letter "A" represent the month when attached or applied. Removing the number of the month and year will enable you to ascertain exactly, after the hose has served its purpose, how long it stood the test. The lower row of figures can be utilized in the same way, by removing the number of the month, so that should you wish to know at any future time how long the hose has been in service it will be there before you.

"Old Colony" Hose is not a cheap hose, and we will positively guarantee it to give you full value if properly applied. If it fails credit will be issued according to the amount of service rendered.



BANNER SUPERHEAT HOSE

This hose is especially adapted for highest pressures and superheat. It is made to take care of lighting and power plants where the pressures are from 125 to 175 lbs.

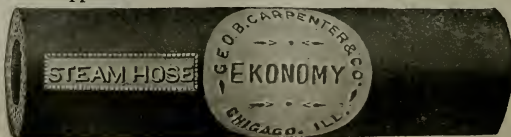
The secret of Banner Superheat hose is in the tube. It remains soft and pliable after being subjected to this abnormal test. For continual service over rough surfaces, we recommend a woven or braided, painted cotton jacket. Prices on application.

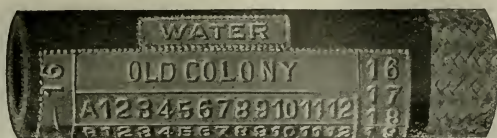
EKONOMY STEAM HOSE

This grade of steam hose is made to meet the requirements of low pressures ranging from 25 to 100 lbs. steam pressure.

It is made of a heavy duck and can be used with the greatest safety under these conditions.

Carried in stock in all sizes up to 1½ inch. 6 ply. Plain or wire wound.

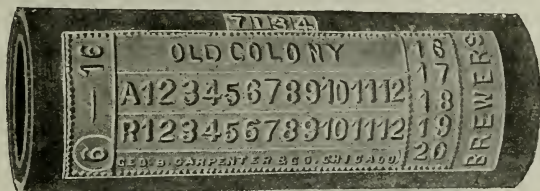


"Old Colony" WATER HOSE

Having had unlimited success in the sale of our "Old Colony" Steam Hose, we adopted a Water Hose of the same type.

It has the same heavy hand made course cover, forced through the braided jacket and vulcanized, which give the other wrapped layers of duck the necessary protection, helping to keep the tube intact.

The initial cost of "Old Colony" Water Hose is higher, but we will guarantee extra service, which means saving money on account of fewer stops for repairs, and many worries.

"Old Colony" NON-KINK BREWER'S HOSE

It is essential in the manufacture of good Brewer's Hose, that it should not be affected by either hot or cold liquids. "Old Colony" hose is made to meet these requirements.

The extra heavy tube in this hose is so compounded that it is not affected by any service that is expected of any good brewer's hose. The cover is heavy and well made, to prevent chafing or cracking when dragged over cement floors.

We have records to show that "Old Colony" Non-Kink Brewer's Hose has given from 5 to 12 years service.

We can furnish this hose in any of the following styles:

White cover and white tube.

Black cover and black tube.

Red cover and red tube.

or any combination of these colors.

List price same as steam hose, shown on preceding page.

ECONOMY BREWER'S HOSE

Made to meet conditions where "Old Colony" is not required. Furnished in white tube and cover only.

CHALLENGE MOLDED WATER HOSE

Challenge Molded Water Hose is made of all braid construction. It is flexible and does not kink. Will withstand considerable pressure. Made in 500 foot reels, enabling us to furnish this hose in any length wanted, in one piece.

Carried in stock in $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inch in two braid, and $1\frac{1}{4}$ and $1\frac{1}{2}$ inch in three braid.

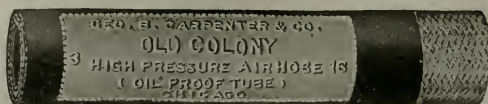
PILOT WATER HOSE

For those wanting a hose for ordinary service, and where it is not economy to use the best, we carry in stock Pilot Water Hose. This is a wrapped hose in 50 foot lengths and will give very satisfactory service for general work. Better than any other for the money.

We also make and carry a complete line of rubber specialties for brewing requirements, among which are: Cloth inserted beer tubing, tapping rubbers, bung washers, rubber mallets, valves, rubber boots, aprons, gloves, gaskets, packings and molded specialties.

LIST PRICES ON THE ABOVE HOSE ON PAGE 863

"Old Colony" AIR HOSE



The product of our many years of experience in marketing various grades and styles of pneumatic air hose. The air hose of today must be built to withstand a greater range of service, and abuses, than the earlier types.

"Old Colony" is recognized as the most flexible tool hose yet produced. The advantage of this flexibility is at once understood by the structural steel worker, and consequently it is the most used and best liked hose by all who have worked with it.

The flexibility of "Old Colony" is due to the use of the purest high grade elastic rubber. The fabric is of the basket weave, braided yarn construction. The tube is oil proof and very tough.

The results of a recent test of pressure resistance, between "Old Colony" braided type hose and the common wrapped hose prove clearly that "Old Colony" is a wonderful product:

1/2-in., 3-braid "Old Colony" burst at 1350 lbs. 3/4-in., 2-braid "Old Colony" burst at 1025 lbs.
 1/2-in., 7ply wrapped hose burst at 125 lbs. 3/4-in., 7-ply wrapped hose burst at 100 lbs.

Many of the lengths of "Old Colony" burst at much greater pressures than those above, which are those of the weaker and average sections. These figures are conclusive evidence of the superiority of "Old Colony"

CHALLENGE MOLDED AIR HOSE



Made in 500 foot lengths put up on reels, from which we can cut any desired length, eliminating unnecessary couplings and avoiding leaks. Carried in stock in the following sizes: 3/8-inch, 2-braid, and 1/2, 5/8, 3/4 and 1-inch in 3-braid.

This is a very flexible molded air hose which will stand considerable pressure and abuse.

ECONOMY AIR HOSE



A 7-ply wrapped hose, which is the least expensive type and is used where a high priced hose is not essential.

The cheapest guaranteed air hose made. Carried in stock in 1/2 and 3/4-inch only.

"Old Colony" SAND BLAST HOSE

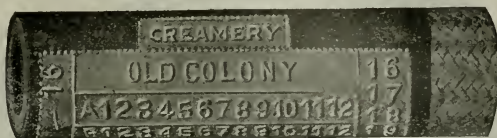


In order to make a sand blast hose practical it is necessary to embody in its construction the very toughest Para rubber. This will withstand the action of the sand which is used to clean steel and iron castings. "Old Colony" is constructed to give the best service for such conditions. We recommend the 1/4-inch tubes for greatest economy.

Furnished in 3-ply, 1/4 to 2 inches, with 1/2 to 1/4-inch tube, and 4-ply, 2 1/4 and 2 1/2 inches, with 1/2 to 1/4-inch tube.

Any of the above grades of air hose can be furnished plain or wire wrapped.

LIST PRICES ON THE ABOVE HOSE ON PAGE 863

"Old Colony" CREAMERY HOSE

Particularly suitable for the dairy and creamery trade. A hose of ordinary construction will not stand the action of grease, acids and butter fats, or the rough handling that is given a piece of hose.

This hose has the same construction and fabric as Old Colony Steam and therefore carries with it the same guarantee for service.

PRICE LIST

I. S. Dia.	3 Ply	4 Ply	5 Ply
$\frac{1}{2}$ in.	\$0.47	\$0.56	\$0.70
$\frac{3}{4}$ in.	.57	.71	.87
1 in.	.70	.87	1.07
$1\frac{1}{4}$ in.	.85	1.04	1.30
$1\frac{1}{2}$ in.	1.02	1.25	1.56

"Old Colony" WASHOUT HOSE

Designed for railroad use to conduct hot or cold water. It will not become hard and brittle from the excessive heat from the fire box or the steam and water.

GASOLINE HOSE**UNDERWRITERS' GRADE**

A four ply wire lined hose. This hose is passed and accepted by the Underwriters' Laboratories of Chicago as it is made according to their specifications.

CHALLENGE GRADE

Made of the same number of plies of duck as the above hose and is made to meet conditions where an expensive hose is not desired. These two grades are carried in Chicago stock in 8 foot and 10 foot lengths, $\frac{3}{4}$ inch and 1 inch diameter. Coupled with nickel plated couplings or plain ends.

We are also in position to figure on your requirements on following:

Acid Hose

Auto Radiator Hose

Coke Hose

Chemical Hose

Divers Hose

Soda Hose

Spray Hose

Pure Gum Tubing

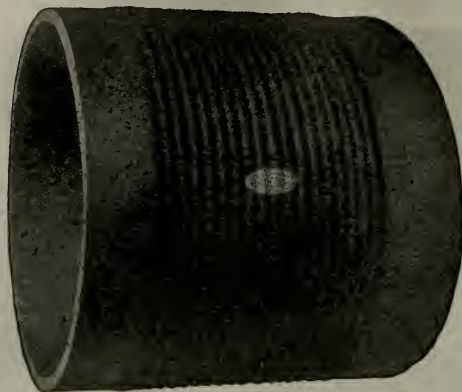
Suction Hose (Hard Rubber)

Wine Hose

Hydraulic High Pressure Hose

Our service department is at your disposal on any matters that require something out of the ordinary.

"Old Colony" CORRUGATED DREDGING SLEEVES



Our improved type dredging sleeves are reinforced to prevent bulging or sudden expansion, and have proved a boon to dredging sleeve users.

They are made of the very finest pure gum in tube, friction and cover. The duck is the heaviest used in any hose construction and at the same time is flexible.

A trial of the Old Colony Corrugated dredging sleeves will at once demonstrate their superiority over others.

Prices upon application.

Seamless Hydraulic Cotton Hose

We also carry for prompt shipment, seamless hydraulic cotton hose, circular woven, in sizes from 3 to 12 inches. Prices quoted upon receipt of specifications.

Hydraulic Mining Hose

Write us for prices on Hydraulic Mining hose. We have it in the 6 inch diameter, made of triple sewed cotton duck, in thicknesses from 2/0 to 12/0.

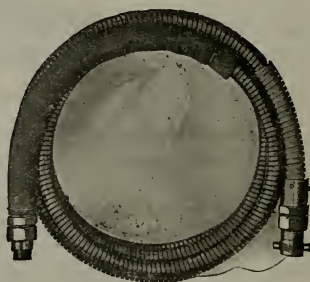
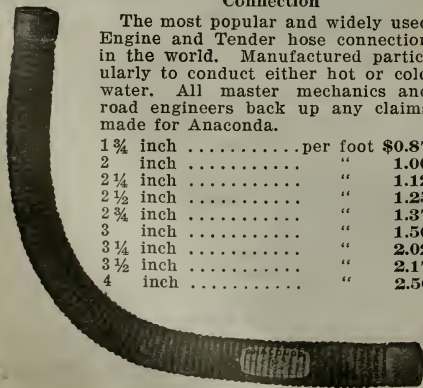
Cotton Conducting Hose for Mines, etc.

For conducting service in Mines, etc., we have a superior grade of strong and inexpensive seamless cotton hose. Full rolls consist of 400 foot lengths, but we will cut and ship any length desired. Sizes from 3/4 to 12 inches. Prices upon receipt of specifications.

Anaconda Engine and Tender Hose Connection

The most popular and widely used Engine and Tender hose connection in the world. Manufactured particularly to conduct either hot or cold water. All master mechanics and road engineers back up any claims made for Anaconda.

1 3/4 inch	.....	per foot	\$0.87
2 inch	.....	"	1.00
2 1/4 inch	.....	"	1.12
2 1/2 inch	.....	"	1.25
2 3/4 inch	.....	"	1.37
3 inch	.....	"	1.50
3 1/4 inch	.....	"	2.02
3 1/2 inch	.....	"	2.17
4 inch	.....	"	2.50



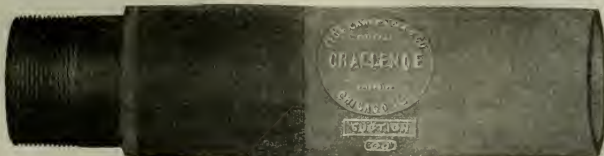
Metal Steam Hose

For those who prefer the use of a metallic steam hose, we are in position to furnish immediately, any quantity desired. We consider our brand the best on the market. **Prices on request.**

Illustration above shows an 18 foot length of 3/4 inch hose, with packed couplings and reinforced ends attached. One end covered with asbestos and brown duck.

SUCTION HOSE

"CHALLENGE SUCTION HOSE"



Users of "Challenge" Suction Hose are most emphatic in their praises of this particular brand. Because of the severe conditions met with in such service Challenge Hose is built around a very good tube, which resists to the greatest possible extent, the cutting action of sand, gravel sharp stones and rocks, and other substances which destroy a cheaper hose.

"CHALLENGE" Suction Hose is recognized by the exceptionally heavy flat steel wire which prevents collapsing or kinking. We have had cases where CHALLENGE Suction Hose has had loaded wagons and wheelbarrows pass over it without causing any perceptible damage.

Challenge is furnished complete with nipples vulcanized in the hose and wired on with a heavy copper wire under tension, then soldered. This method of inserting nipples has proven the greatest possible boon to users on account of the fact that it prevents pulling off either when making the connections to the pump, lowering in place, or vibration while under service. This not only saves possible loss by injury but time plugging up a leaky connection.

When a female end is desired we furnish a regular heavy iron pipe union, which makes the same connection as a male and female coupling.

"Old Colony" OIL SUCTION HOSE

Is made to order only, as a hose of this character is of a specific nature and requires special compounding to withstand the action of hot or cold oils.

MISSISSIPPI RIVER SPECIAL

We have made a special study of sand and gravel suction hose larger than 5 inches in diameter. We have furnished a great number of pieces to users of this hose along the Mississippi River and have met with unlimited success.

Prices furnished on application.

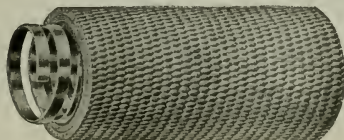
VACUUM HOSE

We can furnish the light flexible hose for use in the smaller and lighter household machines and larger hose for use in hotels, apartments and public buildings. Also a grade used by cleaning service companies from the street to the house.

When ordering, please state the service for which the hose is intended, how the ends are to be prepared, whether wire shall terminate at the ends, or whether the ends are to be made soft so as to take care of the couplings, and what distance back. Also state if plain or covered hose is wanted.

Sterling Suction Hose can also be furnished if desired.

AGRO WIRE LINED SUCTION HOSE



Furnished in 2 inch size only, plain and cotton jacketed cover. This hose is the cheaper kind, particularly adapted for agricultural work. Made with enlarged ends so that it can be attached to pipe very easily.

LIST PRICES ON THE ABOVE HOSE ON PAGE 863

MOLDED GARDEN HOSE

500 Foot Reels

All Braided Fabric Construction—A Grade For Every Requirement

In order to meet the varying desires and needs of our trade, our line of Molded Garden Hose affords a wide range of choice. A slight difference is made in the quality of the different rubbers to adapt each one to the particular conditions of service and cost surrounding the use of each hose.

We believe it pays to buy only a good grade of hose, which with proper care will last many seasons. Accordingly, we take particular care to market only qualities that are the best obtainable value at the price. That means longer service, greater economy, and more satisfied customers.

The method of construction of our Garden Hose—the Braided Fabric Type—is not like the wrapped type. Braided Fabric Hose is built up as one piece around the rubber tube. The strands are woven in one united continuous length. They are built right into the hose. That makes it stronger and prevents kinking or unwrapping.

The strands are of very strong cotton thread only and with a great tensile strength. The finest rubber is used for the tube.

All molded Garden Hose is made in approximately 500 foot lengths without extra charge. Sizes ready for immediate delivery: $\frac{1}{2}$ inch, $\frac{5}{8}$ inch, $\frac{3}{4}$ inch diameter.



"Old Colony"

"Old Colony"—For unusually severe service. Withstands kinks, twists, corner posts or sharp stones. Flexible and tough. The last word in Garden Hose Construction. Unquestionably the best hose that money, experience and careful workmanship can produce.

With ordinary care Old Colony is guaranteed to last at least 5 years.

List Prices

$\frac{3}{4}$ inch.....per foot \$0.25 $\frac{5}{8}$ inch.....per foot \$0.23 $\frac{1}{2}$ inch.....per foot \$0.22



Challenge—Smooth



Challenge—Ribbed



Lariat—Ribbed—Red



Naiad—Ribbed



Geyser—Smooth

LIST PRICES

Lariat—Red
Ribbed

$\frac{3}{4}$ inch	Per Foot	21c
$\frac{5}{8}$ inch	"	20c
$\frac{1}{2}$ inch	"	19c

Naiad
Ribbed

$\frac{3}{4}$ inch	Per Foot	19c
$\frac{5}{8}$ inch	"	18c
$\frac{1}{2}$ inch	"	17c

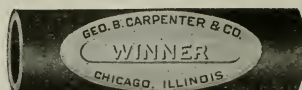
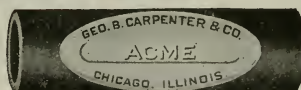
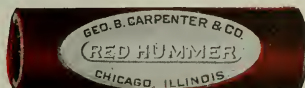
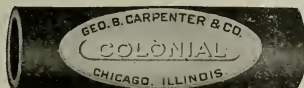
Challenge
Smooth and Ribbed

$\frac{3}{4}$ inch	Per Foot	20c
$\frac{5}{8}$ inch	"	19c
$\frac{1}{2}$ inch	"	18c

Geyser
Smooth

$\frac{3}{4}$ inch	Per Foot	18c
$\frac{5}{8}$ inch	"	17c
$\frac{1}{2}$ inch	"	16c

WRAPPED GARDEN HOSE



The wrapped style of construction in garden hose represents the original method of making garden hose. The hose is made of long pieces of bias cut material, wound around a rubber tube. It is possible to make this hose more economically than the moulded and braided types, which accounts for the difference in price. The wrapped hose is generally used for ordinary garden duty, or for construction work.

We always carry in stock the wrapped style of garden hose, $\frac{1}{2}$ and $\frac{3}{4}$ inch inside diameter, in 4, 5, 6 and 7 ply, under the following brands:

$\frac{3}{4}$ inch, 4 ply	Winner	per foot	\$0.15
$\frac{3}{4}$ inch, 5 ply	Acme	"	.16
$\frac{3}{4}$ inch, 5 ply	Red Hummer	"	.17
$\frac{3}{4}$ inch, 6 ply	Colonial	"	.18
$\frac{3}{4}$ inch, 7 ply	Empress	"	.19

$\frac{1}{2}$ inch 1 cent per foot less.

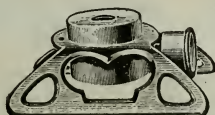
Each length is coupled with brass shell couplings, all for $\frac{3}{4}$ inch connection.

Every length is guaranteed for one season.

We also carry Cotton Rubber Lined Hose, $\frac{1}{2}$ and $\frac{3}{4}$ inch inside diameter, $\frac{3}{4}$ inch couplings.



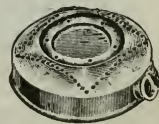
Blake
Fig. 456A



Evanston
Fig. 456B



Ring
Fig. 456C



Baby Ring
Fig. 456D

BLAKE. No. 3 $\frac{1}{2}$ is cast brass, rough. No. 4 is cast brass, nickel plated. All others are galvanized iron. No. 2 and 5 have iron pipe connections. Nos. 1, 3, 3 $\frac{1}{2}$ and 4 have hose connection.

Number	1	2	3	3 $\frac{1}{2}$	4	5
Size connections.....inches	$\frac{3}{4}$	$\frac{3}{4}$	1	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{2}$
Price.....per dozen	\$5.00	5.00	7.00	8.00	9.00	5.00

The Evanston is built on the well-known principle of the tangential spray. Has no revolving parts to wear out. **The Ring** is the best of its class. The perforations in the top are arranged to distribute water in the most thorough and effective manner. **Baby Ring Sprinklers** throw a finely distributed spray of water covering as large a circle as any of the similar low down sprinklers, either of the ring type or the cast iron variety.

Price, Evanston. Height, 2 $\frac{1}{4}$ inches, japanned..	per dozen	\$8.00
Price, Ring. Stamped sheet brass, 8 inches in diameter	"	11.50
Price, Baby Ring. Height, 1 $\frac{1}{4}$ inches, 6 inches in diameter	"	8.00

LAWN SPRINKLERS

Fig. 910A.
PLUVIUS.Fig. 910B.
COLUMBIA.Fig. 910C.
CYCLONE.Fig. 910D.
YANKEE.

The Pluvius is ball-bearing revolving with the slightest pressure, and covers a large or small circle according to the water pressure. It has a movable brass swivel at the base for making connection with the hose.

The Columbia is a very popular style of sprinkler, having revolving parts that do not wear out, and it runs for years. Similar to the Cyclone and Preston shown below.

The Cyclone has three arms, as shown in the engraving.

The Yankee is supported on a sled made of malleable iron about 12 inches square, so it can be drawn over the lawn. A very attractive looking accessory.

Name	Height inches	No. of Arms	Price per dozen	
			Brass Arms	Nickel Plated Arms
Pluvius	11	3	\$16.00	\$17.00
Columbia	12	3	18.00	19.50
Cyclone	12	3	17.00	18.50
Yankee	20	4	21.00	23.00

Fig. A910.
MIDGET.Fig. B910.
ZENITH.Fig. C910.
PRESTON.Fig. D910.
MAYFLOWER

Midget Sprinklers are now equipped with the same head as that of the Zenith, improving the working of the sprinkler very materially.

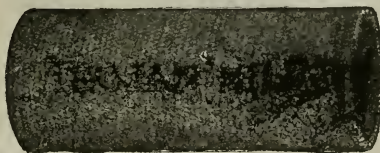
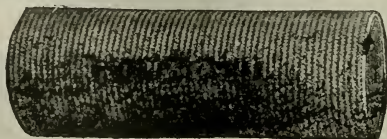
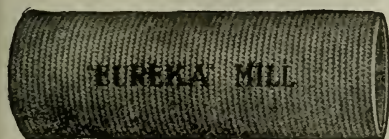
Zenith Sprinklers represent a new principle in the revolving sprinkler head, and have eliminated friction as far as possible in a lawn sprinkler which is not ball-bearing.

The Preston is a reliable, satisfactory sprinkler, becoming very popular.

The Mayflower has a high base, brass movable swivel for hose connection. Has brass head japanned red.

Name	Height inches	No. of Arms	Length of Arms inches	Price per dozen	
				Brass Arms	Nickel Plated Arms
Midget	4	3	3	\$12.00	\$13.50
Zenith	5	3	6	14.00	15.50
Preston	6 1/2	3	6	16.00	17.50
Mayflower	9	3	6	16.50	18.00

COTTON RUBBER LINED MILL HOSE



Eureka Mill Hose is a single ply seamless woven hose, intended particularly for manufacturing establishments, warehouses, piers, hotels and public institutions or anywhere that hose is kept attached to standpipes, etc.

Trojan Mill Hose is of the same general construction as Eureka and is much in demand for similar service under less pressure.

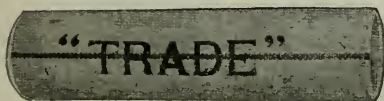
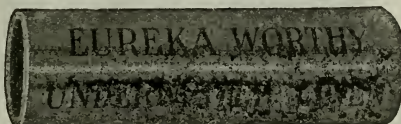
Pioneer Mill Hose is a dependable brand, although not the equal of two above mentioned brands. There is much of it in use.

Carried in stock up to 2½ inches, coupled or uncoupled.

LIST PRICES

1 inch internal diameter.....per foot	\$0.40	2½ inch internal diameter.....per foot	\$0.80
1¼ inch internal diameter....."	.45	3 inch internal diameter....."	1.10
1½ inch internal diameter....."	.50	3½ inch internal diameter....."	1.50
2 inch internal diameter....."	.65	4 inch internal diameter....."	2.00

LINEN HOSE



"Eureka 20th Century" Linen Hose. Our red, white and blue color stripe in this brand is separated, having the plain unbleached yarn between colored strands. Labeled strictly in accordance with the requirements and specifications of the Underwriters.

Underwriter Standard "Worthy" Linen Hose. The color stripe in "Worthy" consists of a continuous white stripe of 4 warps between zigzag red and blue lines of 4 warps each separated by 8 plain warps. This hose competed favorably in its ability to conform to requirements of high standard tests with any flax hose manufactured except Eureka Best and 20th Century, and may be installed with perfect confidence in its reliability in any place where highest grades of other makes are acceptable. Labeled strictly in accordance with the requirements and specifications of the Underwriters.

Made in any length up to 300 feet inclusive.

"Trade" Linen Hose. The stripe in this brand consists of three red and two brown strands.

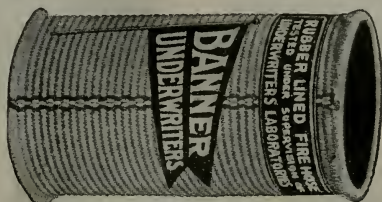
"Red Ball" Linen Hose. Stripe consists of a red strand and one of orange.

LIST PRICES

EUREKA 20TH CENTURY		EUREKA, WORTHY, RED BALL AND TRADE	
¾ inch internal diameter.....per foot	\$0.22	¾ inch internal diameter.....per foot	\$0.18
1 inch internal diameter....."	.24	1 inch internal diameter....."	.20
1¼ inch internal diameter....."	.27	1¼ inch internal diameter....."	.22
1½ inch internal diameter....."	.30	1½ inch internal diameter....."	.25
1¾ inch internal diameter....."	.32	1¾ inch internal diameter....."	.28
2 inch internal diameter....."	.34	2 inch internal diameter....."	.30
2¼ inch internal diameter....."	.37	2¼ inch internal diameter....."	.33
2½ inch internal diameter....."	.40	2½ inch internal diameter....."	.35
3 inch internal diameter....."	.55	3 inch internal diameter....."	.50

COTTON RUBBER LINED FIRE HOSE BANNER UNDERWRITERS' SINGLE JACKET FIRE HOSE

Built According to Specifications of the Underwriters' Association



Banner Underwriters' Single Jacket Fire Hose is a 2½ inch, cotton jacketed, rubber-lined hose for use in mill and factory fire protection. It is built carefully in conformance to the Underwriters' specifications. Also furnished in 1½ and 2½ inch, single and double jacket.

But more than that, there is built into Banner Brand quality and life-giving elements which add a margin of safety in excess of the mere requirements of the Underwriters' Association. It has long life and exceptional value. It is on the approved list of the Associated Factory Mutual Fire Insurance Companies, Boston, Mass.

Suggestions For Increasing Life of Hose

1. All cotton rubber-lined hose should be wound on reels—not folded on racks.
2. Folding is very harmful to the rubber lining—liable materially to shorten life of hose.
3. Water should be passed through cotton rubber-lined hose about once every three months.
4. Hose should be dried thoroughly after each use before reeling up.

EUREKA U. S. FIRE HOSE



This is a well known hose, made by the Eureka Fire Hose Manufacturing Co., and is made in accordance with the specifications of the National Board of Underwriters. Furnished in 1½, 2½ and 3 inch size, coupled or uncoupled.

"Old Colony" DOUBLE JACKET FIRE HOSE

The Maximum in Efficiency and Economy



"Old Colony" Double Jacket Fire Hose yields high efficiency and economy because it is made of a high quality of cotton fabric and a rubber exactly adapted to the purpose for which it is intended. This quality of material combined with careful workmanship gives the "Old Colony" Fire Hose a durability in construction that will pay premiums on the investment. It means longer life and greater satisfaction in service.

Provision is made for the unusual demands that may frequently be placed upon fire hose. "Old Colony" Double Jacket Hose will carry a 400 pound tested pressure and is free from leaking defects.

The economy in per-foot cost is one of the astonishing features of "Old Colony". While of high quality and dependable in service, its original cost is moderate. For actual value it is equal to any hose on the market at the price.

WHITE STAR DECK HOSE



"White Star" is an especially constructed Deck Hose. It is similar to the wrapped duck water conducting hose, except that it has a rubber coated duck cover which protects the hose from the wear and tear resulting from constant dragging over decks, hard floors and rough surfaces or around sharp corners on board ship.

The standard construction used is four and five plies—that is, three and four plies on the inside and the rubber coated and rubber impregnated cover.

We have found that our hose will give longer service on account of its unique style of cover which is placed on the other layers in spiral form, which makes kinking almost an impossibility.

"White Star" Deck Hose has been adopted by a number of Lake Lines because of its service record.

Carried in stock 1 1/4 inch 4 ply coupled or uncoupled.

1 1/4 inch 5 ply " " "

1 1/2 inch 4 ply " " "

1 1/2 inch 5 ply " " "

Can be furnished wire wound if wanted.

WIRE WINDING



No. 1
Round
Wire



No. 2
Heavy
Oval



No. 3
Marlin
Wound



No. 4
Crescent or
Half Round



No. 5
Flat

We are equipped to take care of wire winding on all sizes and makes of hose with our own machine on any of the four styles of wire as shown herewith, or can also Marlin wind, if preferred.

List Prices

For Winding Steam, Water, and Brewers' Hose with Flat, Round, or Half Round Tinned-Steel Wire. Prices on Marlin Winding upon request.

Size per foot	3-Ply	4-Ply	5-Ply	6-Ply
1/2 inch	\$0.09	\$0.10	\$0.11	\$0.12
3/4 inch	.11	.12	.13	.14
1 inch	.13	.14	.15	.16
1 1/4 inch	.15	.16	.17	.18
1 1/2 inch	.18	.19	.20	.21
1 3/4 inch	.20	.21	.22	.23
2 inch	.23	.24	.25	.26
2 1/4 inch	.25	.26	.27	.28
2 1/2 inch	.27	.28	.29	.30

CARPENCO RUBBER SHEET TILING



Fig. 0472, Design 48

Carpenco Rubber Sheet Tiling is now recognized as the ideal flooring for elevators, aisles, corridors, lobbies, and other places where a high grade sanitary material is desired.

This sheet tiling is entirely different from any other floor covering on the market. It will outlast six carpets or cork linoleums, and is guaranteed to lie perfectly flat on the floor at all times. Being made in large rubber sheets, bulging or spreading at seams is prevented and moisture is kept from the cement.

Guaranteed to leave no odor and clean easily. Soft under the feet, and is noiseless.

Made to order in a great variety of designs and combinations of color effects.

Furnished in $\frac{1}{4}$ inch, $\frac{1}{2}$ inch and $\frac{3}{4}$ inch thickness.

Estimates cheerfully and promptly furnished upon request.

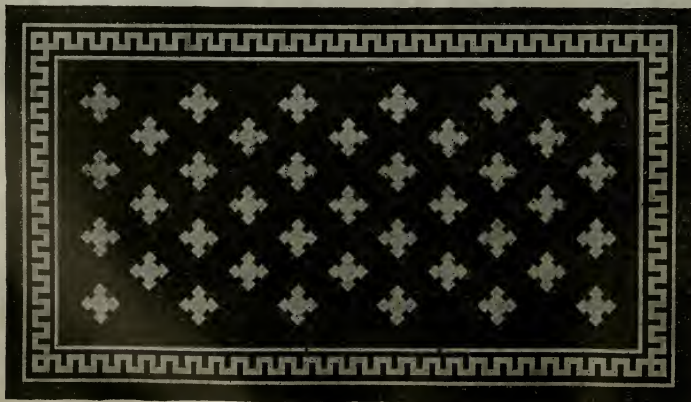
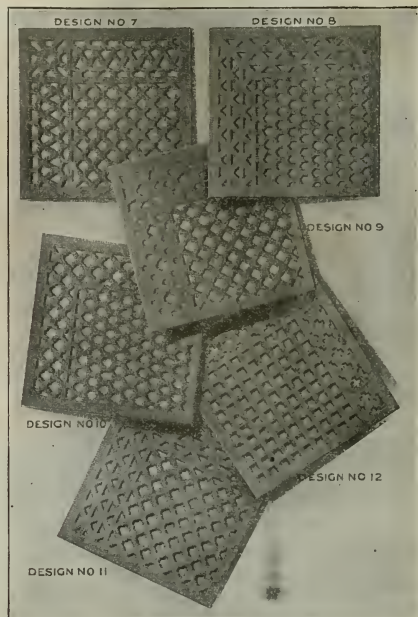
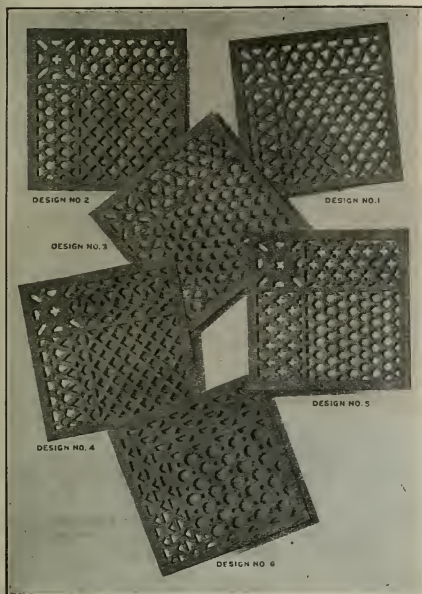


Fig. 0473, Design 50

"OLD COLONY" PERFORATED MATS



We are in a position to furnish **Perforated Mats** of any design as shown above, in any thickness. Our mats give longer wear and more satisfactory service than the average mat of this kind.

Price, $\frac{1}{4}$ inch thick.....	per sq. ft.	\$0.75
Price, $\frac{3}{8}$ inch thick.....	"	1.00
Price, $\frac{1}{2}$ inch thick.....	"	1.25
Price, $\frac{3}{4}$ inch thick.....	"	1.50
White letters.....	each	.75
Black letters.....	"	.50

All-white mats, or other colors, on application.

KNOB AND CORRUGATED MATTING



Fig. 375A

Knob matting is made any width up to 90 inch. $\frac{3}{8}$ inch weighs about $12\frac{1}{2}$ lbs. to the square yard.

Per lb.\$0.40

Corrugated matting, 30 and 36 inches wide in stock—other widths to order. $\frac{1}{4}$ inch thick weighs 9 lbs. to the square yard. $\frac{3}{8}$ inch thick weighs about $6\frac{1}{2}$ lbs. to the square yard.

Per lb.\$0.50

METAL INSERTED STEP MATS

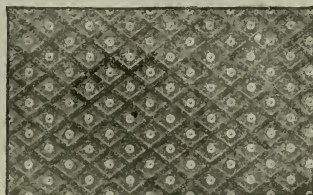


Fig. 375B

There is nothing on the market that equals our Metal-Inserted Mats for wear and tear, and hard usage of every description. We make them with metal insertion in each or every other rubber diamond as described.

Manufactured up to 80 inches wide and 6 feet long.

$\frac{3}{8}$ inch thick.....	per sq. ft.	\$1.00
$\frac{1}{4}$ inch thick.....	"	1.30

HOSE CARTS

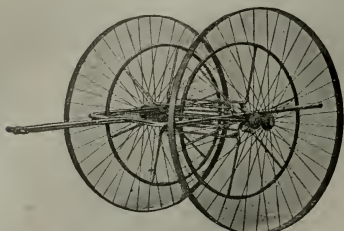


Fig. Styles E and F

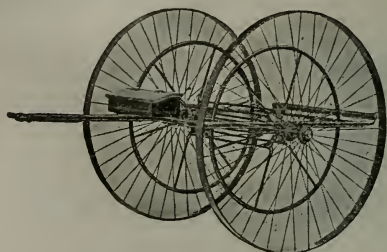


Fig. Style H

Style	E			F		
Number of Reel	90	100	110	101	102	103
Height of Wheel	36	36	38	42	48	52
Width Over All	31	33	38	42	48	54
Weight, Bundled	75	90	100	145	175	200
Capacity, $\frac{3}{4}$ -inch, 3-ply Rubber Hose	500	600	800	...	...	...
Capacity, 1 -inch, 4-ply Rubber Hose	200	300	400	...	...	...
Capacity, 1 $\frac{1}{4}$ -inch, 4-ply Rubber Hose	150	200	300	...	...	...
Capacity, 1 $\frac{1}{2}$ -inch, 4-ply Rubber Hose	100	150	200	250	400	500
Capacity, 2 -inch, 4-ply Rubber Hose	...	...	...	200	300	400
Capacity, 2 $\frac{1}{2}$ -inch, 4-ply Rubber Hose	...	...	...	150	250	300
Capacity, 1 $\frac{1}{4}$ -inch, Cotton Rubber-Lined Hose	300	400	500	...	...	...
Capacity, 1 $\frac{1}{2}$ -inch, Cotton Rubber-Lined Hose	200	300	400	500	650	800
Capacity, 2 -inch, Cotton Rubber-Lined Hose	150	200	250	350	500	600
Capacity, 2 $\frac{1}{2}$ -inch, Cotton Rubber-Lined Hose	100	150	200	250	400	500
Price	each \$12.00	\$17.00	\$25.00	\$35.00	\$45.00	\$55.00

Style	G			H		
Number	104	105	106	107	108	109
Height of Wheel	42	48	52	42	48	52
Extreme Width	42	48	54	42	48	54
Weight, Bundled	155	175	200	160	190	230
Capacity, 1 $\frac{1}{2}$ -inch, 4-ply Rubber Hose	250	400	500	250	400	500
Capacity, 2 -inch, 4-ply Rubber Hose	200	300	400	200	300	400
Capacity, 2 $\frac{1}{2}$ -inch, 4-ply Rubber Hose	150	250	300	150	250	300
Capacity, 1 $\frac{1}{2}$ -inch, Cotton Rubber-Lined Hose	500	650	800	500	650	800
Capacity, 2 -inch, Cotton Rubber-Lined Hose	350	500	600	350	500	600
Capacity, 2 $\frac{1}{2}$ -inch, Cotton Rubber-Lined Hose	250	400	500	250	400	500
Price	each \$40.00	\$50.00	\$60.00	\$50.00	\$60.00	\$70.00

Style E, suitable for large quantity of small hose or a small quantity of large hose; tubular steel reel, frame and tongue; wide tires.

Style F, tubular steel frame and reel; steel wheels. Finished in vermilion and black. Special sizes to order.

Style G, same construction as Style H, but without friction roller and brace at rear of frame. Finished in vermilion and black.

Style H, tubular steel frame and reel; steel wheels, tool box and friction roller. Finished in vermilion and black.

WIRT'S VICTOR HOSE REEL

ALL METAL



Fig. 902. Victor

Is constructed with channel steel frame, strong cast iron wheels, solid steel reel arms and 9-inch drum of heavy corrugated steel. Equipped with a ring on side of frame to prevent reel from unwinding, when desired, and with holder at top of frame for holding nozzle when spraying. Frame enameled green, wheels and reel black, making a very attractive appearance. Weight 12 $\frac{1}{2}$ lbs. bundled for shipping. Capacity 100 feet $\frac{3}{4}$ -inch rubber hose.

Price \$2.00

HOSE CARTS AND REELS

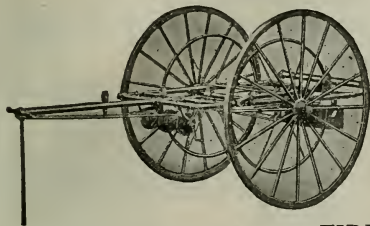
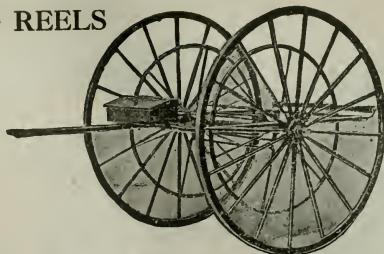


Fig. Style IX

FIRE JUMPERS

Fig. Style O



Style IX, mounted on strong wooden wheels, have rope reel and drag rope, tool box, axe in spring holder, nozzle holder and friction roller.

Style J, mounted on steel wheels, otherwise same construction and equipment as Style IX.

WAREHOUSE CARTS

Style O, strong and substantially built and capable of withstanding rough usage. Frame and reel of tubular steel, mounted on strong wood wheels. Neatly painted and striped. Equipped with tool box and friction roller.

Style P, similar construction to Style O carts, but without tool box, friction roller or brace at rear of frame.

LIST PRICES—FIRE JUMPERS

Style	IX			J		
Number of Jumper	3½	4½	5½	0½	1½	2½
Height of wheels.....inches	44	48	52	42	48	52
Extreme width....."	48	54	54	48	54	54
Weight, complete.....pounds	200	250	275	185	230	260
Shipping weight, crated....."	250	310	350	240	300	340
Cap., 2½ inch double jacket fire hose.....feet	150	250	300	150	250	300
Cap., 2½ inch cotton rubber lined mill hose....."	300	400	500	300	400	500
Price.....each	80.00	90.00	100.00	90.00	100.00	110.00
Without rope reel and rope, axe and axe holders.."	60.00	70.00	80.00	65.00	75.00	85.00

LIST PRICES—WAREHOUSE CARTS

Style	O				P			
Number of Cart	440	441	442	443	450	451	452	453
Height of wheels.....inches	40	44	48	52	40	44	48	52
Extreme outer width....."	38	42	48	54	38	42	48	54
Extreme length....."	5½	6½	6½	7	5½	6	6½	7
Weight, complete.....pounds	95	165	180	210	100	160	180	210
Shipping weight, crated....."	400	500	650	800	400	500	650	800
Cap., 1½ inch cotton rubber lined hose.....feet	250	350	500	600	250	350	500	600
Cap., 2 inch cotton rubber lined hose....."	400	500	600	800	400	500	600	800
Cap., 2½ inch cotton rubber lined hose....."	250	300	400	500	200	300	400	500
Price.....each	35.00	45.00	55.00	65.00	25.00	35.00	45.00	55.00

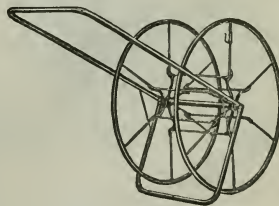
TUBULAR ALL METAL HOSE REEL

Undoubtedly the best garden hose reels on the market, having a number of exclusive features. The reeling or unreeling is very easy, as the frame can be tipped down to support the reel clear of the ground, and there are no exposed spokes to interfere with either operation.

These reels cannot tip over when unreeling, and the large rims forming the wheels make them very easy to move about.

There is no weight to carry with the style "B" reels, as the weight of the hose is borne upon the rims and is not carried on the handle as in other types.

Absolutely all metal, tubular steel rims and frame, steel spokes and malleable iron castings; Nos. 10 and 20 have corrugated galvanized drum.

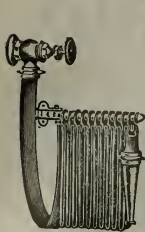
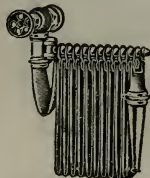
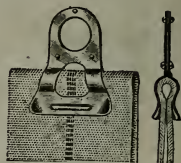


Figs. 30, 35 and 40

Figs. 10 and 20

Number of Reel	10	20	30	35	40
Height of reel.....inches	21	24	29	32	34
Weight of reel, bundled for shipping.....pounds	20	22	35	52	80
Capacity, ¾ inch 3-ply rubber hose.....feet	100	150	400	600	800
Capacity, 1 inch 4-ply rubber hose....."	50	75	150	200	300
Capacity, 1½ inch 4-ply rubber hose....."	...	...	100	150	250
Capacity, 1½ inch cotton rubber lined hose....."	...	100	200	350	500
Capacity, 1½ inch cotton rubber lined hose....."	...	75	150	250	400
Capacity, 2 inch cotton rubber lined hose....."	...	...	100	200	300
Price (Nos. 10 and 20 galvanized add \$1.75 to list price)...	3.50	4.00	6.50	12.00	25.00

YALE HOSE RACKS

Fig. 904A
Style NFig. 904B
Style OFig. 904C
Style PFig. 904D
Detail Showing
Method of Hose
Suspension

The hose is suspended from an extension arm by a series of brass clips in such a way that there is no pressure on either the edge or the fold of the hose. When the valve is opened the pressure of the water is sufficient to free the hose from the clips without any possibility of injury to the hose or rack. It is a satisfactory "one-man" device.

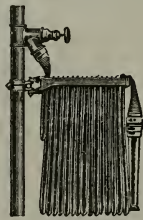
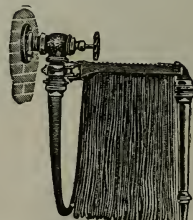
IRON

Number			Capacity Unlined Linen Hose, Feet	Size Hose inches	Price, each	
Style N	Style O	Style P			Fin- ished	Nickel Plated
0	10	20	50	1½	\$5.00	\$6.00
2	12	22	50	2½	5.00	6.00
3	13	23	75	1½	5.00	6.00
5	15	25	75	2½	5.00	6.00
6	16	26	100	1½	6.00	7.00
8	18	28	100	2½	6.00	7.00
9AX	19AX	29AX	150	1¼	7.00	8.00
9B	19B	29B	150	2	7.00	8.00
9C	19C	29C	150	2½	7.00	8.00

BRASS

Number			Capacity Unlined Linen Hose, feet	Size Hose inches	Price, each	
Style N	Style O	Style P			Fin- ished	Nickel Plated
100X	110X	120X	50	1¼	\$8.00	\$9.00
101	111	121	50	2	8.00	9.00
103X	113X	123X	75	1¼	8.00	9.00
104	114	124	75	2	8.00	9.00
106X	116X	126X	100	1¼	9.00	10.00
107	117	127	100	2	9.00	10.00
109A	119A	129A	150	1½	10.00	11.00
109B	119B	129B	150	2	10.00	11.00
109C	119C	129C	150	2½	10.00	11.00

BOWES' HOSE RACKS

Fig. 904E
Style EFig. 904F
Style FFig. 904G
Style G

The style of Bowes' hose racks shown above have a shield on each side to hide the pins and supporting arms. They represent a most practical and reliable pin rack, their distinctive advantage being that the pins or supporting rings do not fall to the floor when the hose is pulled from the rack as in the case of similar racks.

No.	Style	Kind of Material	Capacity Unlined Linen Hose, Feet	Size Hose inches	Price, each	
					Finished	Nickel Plated
31	E	Iron	50	1½	\$ 5.00	\$ 7.00
33	E	Iron	50	2½	5.00	7.00
34	E	Iron	100	1½	6.00	8.00
132	E	Brass	50	2	10.00	11.00
133	E	Brass	50	2½	10.00	11.00
134	E	Brass	100	1½	12.00	13.00
136	E	Brass	100	2½	12.00	13.00
43	F	Iron	50	2½	5.00	7.00
44	F	Iron	100	1½	6.00	8.00
141	F	Brass	50	1½	10.00	11.00
143	F	Brass	50	2½	10.00	11.00
51	G	Iron	50	1½	5.00	7.00
53	G	Iron	50	2½	5.00	7.00
54	G	Iron	100	1½	6.00	8.00
56	G	Iron	100	2½	6.00	8.00
151	G	Brass	50	1½	10.00	11.00
153	G	Brass	50	2½	10.00	11.00
154	G	Brass	100	1½	12.00	13.00
156	G	Brass	100	2½	12.00	13.00

In ordering state size of pipe to which rack is to be attached. All Bowes' racks are packed in individual wooden boxes.

HOSE RACKS AND REELS

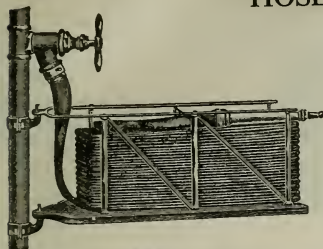


Fig. 906A. Dewey

vantage of this is that the hose lies better on a rack with an arched bottom, as the arch supports the weight of the hose and relieves the folded ends of any pressure. The top of the hose so folded will be level and not concave.

The underwriters do not approve a hose rack with an arch bedplate, but the Hartford Rack is largely specified by architects and owners on account of the advantages above mentioned.

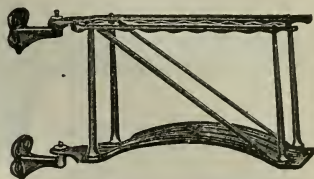


Fig. 906B. Hartford

Dewey Racks No.	Hartford Racks No.	Size Hose inches	Capacity Feet	Kind of Hose	Price Each
7	17	1 or 1 1/4	50	Unlined Linen	\$5.00
8	18	1 1/2	50	" "	5.00
9	19	2	50	" "	5.00
10	20	2 1/2	50	" "	5.00
7A	17A	1 or 1 1/4	75	" "	5.50
8A	18A	1 1/2	75	" "	5.50
9A	19A	2	75	" "	5.50
10A	20A	2 1/2	75	" "	5.50
10 1/2	20 1/2	1 or 1 1/4	100	" "	6.00
11	21	1 1/2 or 2	100	" "	6.00
12	22	2 1/2	100	" "	6.00
13	23	1 1/2 or 2	150	" "	7.00
14	24	2 1/2	150	" "	7.00
13	23	1 1/2 or 2	50	Rubber Lined Cotton Mill	7.00
14	24	2 1/2	50	" " " "	7.00
15	25	1 1/2 or 2	100	" " " "	7.50
16	26	2 1/2	100	" " " "	8.00

Both the Dewey and the Hartford Racks are packed "knocked down" in individual wooden boxes for convenience. Stock finish is red enamel, baked on. Nos. 15, 16, 25 and 26 will carry heavy rubber lined cotton hose in 50-foot lengths.

Both the Dewey and the Hartford Racks are furnished with pipe clamps or wall brackets. In ordering, state which attachment is desired and if pipe clamps, give the size of the standpipe.

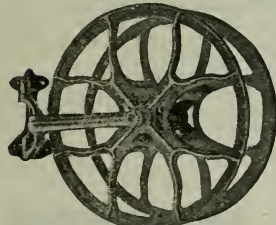


Fig. 909C.

Styles A, C, D and I
Swinging

RYERSON HOSE REELS

Styles A, C, D and I are made with wall brackets or pipe attachment. When ordering to be attached to a standpipe, the size of pipe should be specified.

Style B is a stationary variety of the Ryerson Reel, made to carry rubber lined cotton hose, but it will carry anything that can be wound upon it.

All styles have center braces of wood on which the hose rests. This prevents rusting. The side castings are well finished in solid black, which presents a pleasing contrast to the red braces.

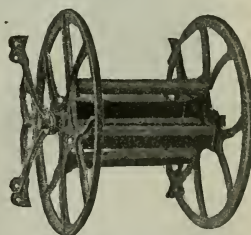


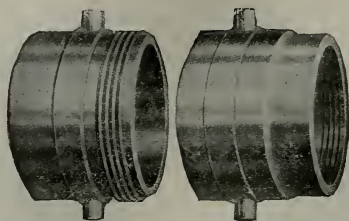
Fig. 909D

Style B—Stationary

No.	Style	Capacity Hose, Feet		Size, Hose inches	Price Each	No.	Style	Capacity Hose, Feet		Size, Hose inches	Price Each
		Unlined Linen	Rubber-Lined Cotton					Unlined Linen	Rubber-Lined Cotton		
1	A	175	50	1 1/4 or 1 1/2	\$6.00	13	C	50	...	1 or 1 1/4	\$6.00
2	"	150	50	2	6.50	14	"	50	...	1 1/2	6.00
3	"	150	50	2 1/2	7.00	15	"	50	...	2	6.50
4	"	250	100	1 1/4 or 1 1/2	7.00	16	"	50	...	2 1/2	7.00
5	"	250	100	2	8.00	17	D	75	...	1 or 1 1/4	6.25
6	"	275	100	2 1/2	8.50	18	"	75	...	1 1/2	6.50
7	B	...	50	1 1/4 or 1 1/2	6.00	19	"	75	...	2	6.75
8	"	...	50	2	6.50	20	"	75	...	2 1/2	7.25
9	"	...	100	1 1/4 or 1 1/2	7.00	31	I	100	...	1 or 1 1/4	6.25
10	"	...	100	2	7.50	32	"	100	...	1 1/2	6.50
11	"	...	100	2 1/2	8.00	33	"	100	...	2	7.00
12	"	...	100	2 1/2	8.50						7.50

Ryerson reels are approved and listed by the Associated Factory Mutual Insurance Companies.

AUTOMATIC EXPANSION RING COUPLINGS


AUTOMATIC EXPANSION RING COUPLINGS
 Instructions for Ordering Automatic Couplings

In ordering Automatic Couplings, always give us:

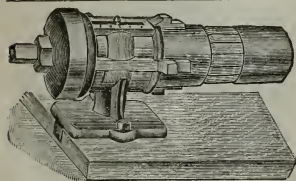
First: The exact outside diameter of the hose. It is always better to send sample of the hose, as different makes of hose vary a great deal, and a made-up sample varies often from the hose when received to be coupled.

Second: We must have sample thread by which to cut thread on the couplings; a description of the thread will not do unless it is iron pipe thread or hose pipe thread, in which case we will make the couplings up, and guarantee them to be iron pipe or hose pipe thread; but we cannot take back couplings which are made up on mere descriptions of the thread, as we guarantee the threads to fit only when sample thread is given us with the order.

Size	inches	1	1½	1½	2	2½	3	3½	4	4½
Price per pair		\$1.35	\$1.70	\$1.85	\$2.20	\$2.85	\$6.00	\$10.00	\$12.00	\$15.00

We make the Underwriter Couplings, automatic style in conformity with the specifications of the Underwriters as to form, weight and mixture of metal. The Underwriter Coupling is made in red brass and is superior to the ordinary automatic couplings in quality of material, weight and finish. Our coupling conforms strictly to the Underwriters' specifications.

Size	inches	1½	2½	2½
Price per pair		\$3.00	\$4.00	\$5.00

**AUTOMATIC COUPLING EXPANDERS**

These expanders are necessary in attaching Automatic, Marine Perfection and similar couplings to hose. The wearing parts are substantially made and work smoothly. Made in all sizes from ½ to 6 inches. Prices on application.

In ordering automatic couplings, always give us: the exact outside diameter of the hose. It is always better to send sample of the hose, as different makes of hose vary a great deal, and a made-up sample varies often from the hose when received to be coupled.

SUCTION HOSE NIPPLES

Rough and poorly fitting nipples will greatly decrease the life of any piece of suction hose and may entirely ruin it. The expenditure of a little care on this detail is well repaid.

Those we furnish are of good length, smooth on the surface, grooved to insure strong and tight joints, and have all edges and grooves rounded off.

We furnish nipples for all sizes of suction hose, wiring them in as a rule.



Size	inches	2	2½	3	3½	4	4½
Total length	inches	7	7	8	10	10	12
Price	each	\$0.60	\$0.90	\$1.25	\$1.75	\$2.00	\$3.00
Price wiring in	"	1.70	1.80	1.90	2.20	2.50	2.60

Size	inches	5	6	7	8	10	12
Total length	inches	12	14	16	16	20	20
Price	each	\$3.60	\$5.00	\$7.25	\$8.75	\$16.25	\$25.00
Price wiring in	"	2.75	3.75	4.25	4.75	5.75	6.50

Strainers, ball and basket, brass or iron furnished and attached to hose when desired.

HOSE PIPES, ETC.

HOSE PIPES



Fig. 905A Underwriter's

Fig. 905B Screw Tip

UNDERWRITERS'

Size	inches	2	2 ½	2 ½	2 ½
Length	inches	20	24	30	36
Price, Wound and Painted	each	\$9.00	11.00	12.00	15.00
Price, Plain Brass	"	7.50	9.50	11.00	13.50
Price, Rubber Tube, Swivel Handles .....	"	.....	.....	15.00	18.00
Price, Leather Tube, Swivel Handles .....	"	.....	.....	.....	18.00

SCREW TIP

Size	inches	¾	¾	1	1	1 ¼	1 ¼	1 ½	1 ½
Length	inches	7 ½	12	8 ½	12 ½	12	15	13	15
Price, Hose Thread	per doz.	\$8.00	10.00	10.00	12.00	20.00	24.00	25.00	30.00
Price, Pipe Thread	"	9.20	11.20	11.20	13.20	21.20	25.00	27.50	32.50

Size	inches	2	2	2	2 ½	2 ½	2 ½	2 ½	2 ½
Length	inches	12	15	20	15	20	24	30	36
Price, Hose Thread	per doz.	\$38.00	45.00	50.00	75.00	96.00	100.00	144.00	157.00
Price, Pipe Thread	"	41.00	48.00	53.00	78.50	99.50	103.50	150.00	163.00



Fig. 905C Plain



Fig. 905D With Cock

PLAIN

Size	inches	¾	¾	1	1 ¼	1 ¼	1 ½	1 ½	2	2	2 ½	2 ½	2 ½
Length	inches	3	8	4	4 ¾	12	5 ¾	12	6 ¾	12	7 ½	12	22
Price, Hose Thread per doz.		\$4.00	7.00	5.00	12.00	18.00	18.00	22.00	26.00	34.00	37.40	55.00	92.00
Price, I. P. Thread.	"	5.00	8.00	6.25	13.75	19.75	19.75	24.00	29.00	39.00	39.50	60.00	120.00

WITH COCK

Size	inches	¾	¾	¾	1	1	1 ¼	1 ¼
Length	inches	6 ¾	8	12	8	12	12	12
Price, Hose Thread	per doz.	\$11.00	13.00	18.00	15.00	20.00	40.00	55.00
Price, Pipe Thread	"	12.20	14.20	19.20	18.00	23.00	43.00	60.00

Size	inches	2	2	2	2 ½	2 ½	2 ½	2 ½
Length	inches	12	20	25	20	24	30	36
Price, Hose Thread	per doz.	\$80.00	110.00	130.00	160.00	175.00	195.00	215.00
Price, Pipe Thread	"	83.00	113.00	133.00	170.00	185.00	205.00	225.00



Fig. 905E

GEM HOSE NOZZLES

Size	inches	¾	1
Price	per doz.	\$10.00	15.00

HOSE VALVES, FIRE AXES AND HOLDERS



Fig. 358. Hose Gate

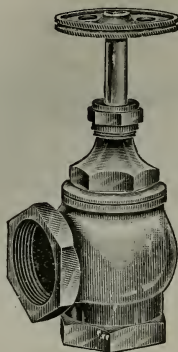
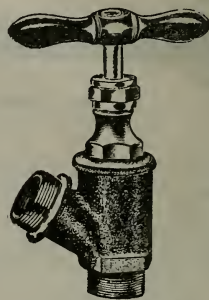
Fig. 171. New York
Fig. 358 HOSE VALVES

Fig. 172. Chicago

Made of heavy bronze metal and designed for use in connection with inside standpipes. They have an adjustable double disc and stationary stem. Each valve is tested before leaving the shop and warranted perfect.

LIST PRICES

Size	inches	¾	1	1¼	1½	2	2½	3
With iron wheel.....each		1.75	2.50	3.50	5.00	7.50	14.00	20.00
With finished bronze wheel.....		3.25	4.05	5.50	7.10	10.30	18.00	25.00
Extra for cap and chain....."		1.25	1.25	1.35	1.50	1.75	2.50	3.50

Fig. 171 NEW YORK PATTERN SOFT SEAT HOSE VALVE

Designed to meet the demand for a high pressure hose valve. Made of the best steam metal, has a full waterway, a renewable soft rubber disc of ample weight and is of attractive design.

Intended for use in connection with standpipes for interior fire protection, especially on wet systems where the pressure is on the valve at all times.

This valve is made in accordance with U. S. Government specifications for post office buildings and is acceptable to the Supervising Architect at Washington.

Size	inches	1¼	1½	2	2½
Rough body, finished trimmings, iron wheel handle.....		4.00	5.00	7.00	9.00
Rough body, finished trimmings, iron wheel handle, N. P.		4.50	5.50	7.50	9.50
Finished brass, finished brass hand wheel.....		5.50	6.50	8.50	10.50
Finished brass, finished brass hand wheel, N. P.		6.00	7.00	9.00	11.00

Fig. 172 CHICAGO PATTERN HOSE VALVE

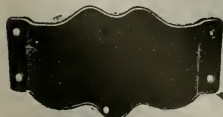
These valves are packed at the stuffing box when they are shipped and have a long stem whereby the stuffing nut can be raised to admit packing in the stuffing box.

Shipped with the Tee handle as shown in the cut, but can be furnished with wheel handle if desired, without extra charge if extra time is allowed for making up. We can also furnish valves nickel plated if desired.

LIST PRICE

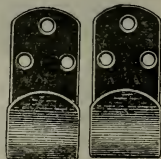
Size, inches	Price List, each	Size, inches	Price List, each
1	\$3.15	2	\$7.00
1¼	3.70	2½	8.50
1½	4.75		

We also make our Chicago Valve with a soft rubber disc at a slight additional cost.

Fig. 172A
Fire Axe SetREGULATION FIRE AXE AND PIKE
POLE HOLDERS

For Buildings

Fire Axe Holder, Japanned or copper
plate.....per set \$0.50
Pike Pole Holders.....per set of two .40

Fig. 172B
Pike Pole Set

FIRE AXE

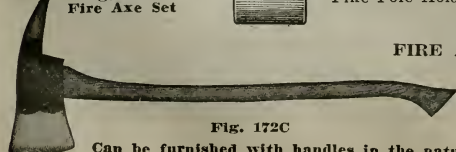


Fig. 172C

5-lb. pick head	each	\$1.75
8-lb. pick head	"	3.00
6-lb. pick head	"	2.00
8-lb. flat head	"	2.00
6-lb. flat head	"	1.75

Can be furnished with handles in the natural color of the wood, or painted, as desired.

CHEMICAL ENGINES AND EXTINGUISHERS

CHEMICAL ENGINES

For manufacturing plants, railroads, warehouses, public buildings and private property in general. Operate by the generation of carbonic acid gas in large quantities under high pressures. Engines have heavy drawn steel cylinders with tops securely riveted, seams being backed up on the inside with a heavy ring of noncorrosive solder. Attachments, such as collar and outlet, are flanged on the inside and riveted, being also heavily backed up with noncorrosive metal. Wheels have iron hubs with brass hub caps, sixteen spokes, and round edge steel tires.

The No. 20 outfit can be wheeled through crowded aisles and narrow doorways, and can be successfully operated from 40 to 60 feet from the nozzle.

List price, No. 20 Outfit, 20 gal. capacity, \$85.00

List price, No. 7 Outfit, 40 gal. capacity, 185.00

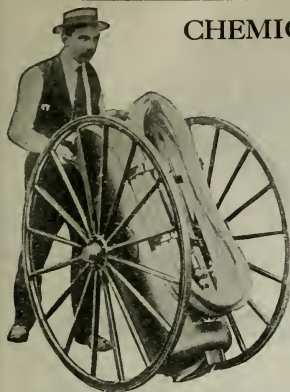


Fig. 909A. 40 gallons Capacity

HAND FIRE PUMP BUCKETS

This type of pump is carried on every hook and ladder truck in the Chicago Fire Department and has demonstrated for itself that it is very efficient for putting out small fires.

It is especially adapted for use in factories, public buildings and schools.

It is simple in construction, easy to operate, strong and well made. The body is of heavy galvanized iron finished in red enamel.

The pump is of brass, 21 inch stroke and double acting, throwing a continuous stream about 40 feet. As the pump is used with plain water it can always be refilled at the nearest water supply.

Capacity, 5 gallons, list each.....\$7.00



Fig. 909B

PEERLESS FIRE EXTINGUISHERS

(Approved by the National Board of Underwriters).

Built of very heavy cold rolled copper. Differs from other extinguishers in that the method of attaching the dome to the body of the shell actually makes that joint the strongest part of the machine. A cast brass bottle-holder is used. Hose is attached to the extinguisher by a swivel ground joint and it is utterly impossible to detach this hose without a wrench.

Price, each \$18.00



Fig. 909AA
20 gallons
Capacity



Fig. 909C

PYRENE

This is a hand extinguisher for home, factory and automobile use, so well known that it needs no detailed description. There is within the container a manually operated double-acting pump which throws a continuous stream. It is absolutely reliable and dependable, always ready for instant use. There is no time lost at the start of a fire in pumping up air, or opening different valves, etc. Its use on an automobile will reduce insurance premiums 15% each year. Over a million in use. Each

Brass Extinguisher and Bracket..... \$12.00
Nickel Extinguisher and Bracket..... \$13.00

Metal Wood

Boxes for (1) Extinguisher \$1.50 each \$2.00 each

Boxes for (2) Extinguishers 2.00 " 2.50 "

Boxes for (3) Extinguishers 4.00 " 3.00 "

Refills.

One Quart.....\$2.00

One Gallon (in one, two or four quart cans)... 6.00

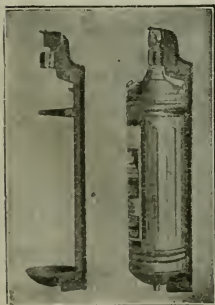


Fig. 909D



Fig. 909E



Fig. 909F

HOSE SPANNERS AND FITTINGS

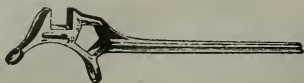


Fig. 8

SPANNER AND HYDRANT WRENCH COMBINED

Be Sure to Specify Size of Hole Required

We carry in stock Fig. 8 Spanners with three sizes of pentagonal holes. Measuring from one side of the hole across to the opposite angle the dimensions are as follows: $1\frac{1}{2}$ inch, $1\frac{1}{4}$ inch, $1\frac{1}{2}$ inch. These holes correspond to the size of the nut on the top of hydrant. In ordering please specify which size is wanted.

Priceper doz. \$5.00

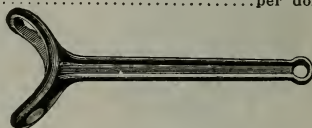
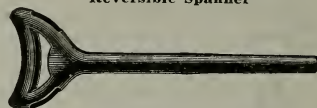
Fig. 6
Two-Eyed SpannerFig. 7
Reversible Spanner

Fig. 9

Common Hose Spanner
Made for $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ inch CouplingsFig. 11
Tabor Spanner

No. 6. Two-Eyed Spanner	per doz.	\$4.50
No. 7. Reversible Spanner	"	4.75
No. 8. Common Spanner, $1\frac{1}{2}$ inch	"	4.00
2 inch	"	4.00
$2\frac{1}{2}$ inch	"	4.00
No. 11. Tabor Spanner	"	4.75

HOSE FITTINGS

Fig. 911A
Hose CapFig. 911B
Hose ReducerFig. 911C
BushingFig. 911D
ReducerFig. 911E
Male NippleFig. 911F
Male and
Female Nipple

Fig. 911A HOSE CAPS

Size	inches	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Price	per doz.	4.00	6.00	8.00	10.00	15.00	24.00	31.00	39.00	43.00

Sample of hose thread required must be furnished with order.

Fig. 911B HOSE REDUCERS

Size	inches	$1\frac{1}{2} \times \frac{3}{4}$	$1\frac{1}{2} \times \frac{1}{2}$	$1\frac{1}{2} \times 1$	$1\frac{1}{2} \times 1\frac{1}{2}$	$1\frac{1}{2} \times 2$	$1\frac{1}{2} \times 2\frac{1}{2}$	$2 \times \frac{3}{4}$	2×1	$2 \times 1\frac{1}{2}$
Price	per doz.	6.50	8.00	10.00	11.50	11.50	12.00	13.00	14.00	16.00

Size	inches	$2 \times 1\frac{1}{2}$	$2\frac{1}{2} \times \frac{3}{4}$	$2\frac{1}{2} \times 1$	$2\frac{1}{2} \times 1\frac{1}{2}$	$2\frac{1}{2} \times 2$	3×2	$3 \times 2\frac{1}{2}$	.....
Price	per doz.	18.00	20.00	22.00	23.00	24.00	26.00	30.00	36.00

Specify whether hose or iron pipe thread is required.

Figs. 911C and 911D HOSE BUSHINGS AND REDUCERS

Size	inches	$1 \times \frac{1}{2}$	$1 \times \frac{3}{4}$	$1\frac{1}{4} \times \frac{3}{4}$	$1\frac{1}{4} \times 1$	$1\frac{1}{2} \times \frac{3}{4}$	$1\frac{1}{2} \times 1$	$1\frac{1}{2} \times 1\frac{1}{2}$	$2 \times \frac{3}{4}$	2×1
Price	per doz.	5.50	6.50	8.00	10.00	11.50	11.50	12.00	13.00	14.00

Size	inches	$2 \times 1\frac{1}{4}$	$2 \times 1\frac{1}{2}$	$2\frac{1}{2} \times \frac{3}{4}$	$2\frac{1}{2} \times 1$	$2\frac{1}{2} \times 1\frac{1}{4}$	$2\frac{1}{2} \times 1\frac{1}{2}$	$2\frac{1}{2} \times 2$	3×2	$3 \times 2\frac{1}{2}$
Price	per doz.	16.00	18.00	20.00	22.00	23.00	24.00	26.00	30.00	36.00

Figs. 911E and 911F MALE OR MALE AND FEMALE HOSE NIPPLES

Size	inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Price	per doz.	3.50	3.50	5.00	9.00	10.00	14.00	28.00	40.00	50.00	75.00

In ordering any of the above goods, specify whether hose or iron pipe thread is required.

FOR FIRE PLUG WRENCHES, SEE INDEX

HOSE COUPLINGS

THE JOY AUTOMATIC AIR HOSE COUPLER



Fig. 0258
(Male Half for Hose)

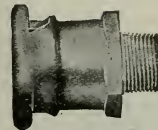


Fig. 0259
(Female Half with Iron Pipe Thread)

Positively will not leak air. Equally successful for heavy or light work. The simplest and most reliable Air Hose Coupling on the market.

Made in two parts, which may through but a turn of the wrist become locked, and as instantly unlocked by a reverse action; all mechanism is enclosed; internally there is but one part to become worn—the rubber washers, which may be easily replaced by removing two lock nuts.

The locking is a simple operation whereby a quarter turn against a cam-sleeve, after passing the lug through the groove (as shown in the illustration) to notch at extreme end, expands a rubber gasket to fill a cylindrical wall, as in a stuffing box.

Any Joy Coupler can be furnished interchangeable with the size next larger or smaller.

Orders should state plainly the size of the coupling wanted; also the internal diameter of hose or size pipe thread with which each half connects. Both the male and female halves can be furnished with either hose end or iron pipe end.

		Prices.				Price, per Pr.	
Size		Price, per Pr.	Size		Price, per Pr.		
$\frac{3}{8}$ inch	.....	\$1.50	$\frac{3}{4}$ inch	.....	\$3.00		
$\frac{1}{2}$ inch	.....	1.50	1 inch	.....	4.00		

Half pairs, take one-half list.

HOSE COUPLINGS



Fig. 366A Spun
 $\frac{1}{2}$ and $\frac{3}{4}$ inch



Fig. 366B Plain
1 inch and smaller

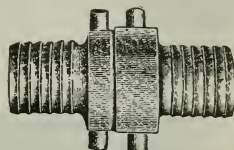


Fig. 366C Lug
 $1\frac{1}{4}$ inch and larger

Size	.....inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
Price Pipe Thread, per dozen		2.65	2.65	4.65	10.50	15.00	26.00	50.00
Size	.....inches	3	$3\frac{1}{2}$	4	5	6	8	.....
Price Pipe Thread, per dozen		76.00	120.00	150.00	250.00	350.00	504.00	.....

STEAM HOSE COUPLINGS

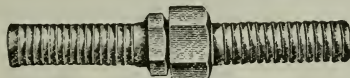


Fig. 366D Steam



Fig. 366E Boss High Pressure Steam and Rock Drill

Size	.....inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
Iron Pipe Thread	.....per dozen	15.00	15.00	18.00	24.00	30.00	42.00	72.00
Female Half Hose Thread	.....	10.00	10.00	12.00	16.00	20.00	28.00	48.00
Female Half Iron Pipe Thread	.....	10.35	10.35	12.75	17.00	21.50	30.00	50.00

BOSS HIGH PRESSURE STEAM AND ROCK DRILL COUPLINGS

Size	.....inches	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Price, Set Complete	.....each	\$1.25	2.00	2.00	3.00	3.50	5.00	8.75	11.25

NOTE:—All Hose Couplings, 1 inch and larger will be furnished with iron pipe or hose thread unless otherwise specified. If Special Thread is desired, sample should accompany order.

HOSE BANDS AND COUPLINGS

WATER HOSE CLAMPS

Size..... inches	¼	¾	¾	½	½	½	¾	¾	¾	1
Hose..... ply	3	2	3	2	3	4	2	3	4	2
Price..... per dozen	.60	.60	.60	.60	.60	.60	.60	.60	.60	2.00
Size..... inches	1	1	1 ¼	1 ¼	1 ½	1 ½	2	2 ¼	2 ½	3
Hose..... ply	3	4	3	4	3	4	3-4	3-4	3-4	3-4
Price..... per dozen	2.00	2.00	2.50	2.50	3.00	3.00	4.00	6.50	7.00	10.00

STEAM HOSE CLAMPS

Size..... inches	¾	¾	1	1	1 ¼	1 ¼
Hose..... ply	3	4	3	4	3	4
Inside Diameter..... inches	1 ⅞	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾
Price..... per dozen	2.00	2.00	2.50	2.50	3.00	3.00
Size..... inches	1 ½	1 ½	2	2	2 ½	2 ½
Hose..... ply	3-4	5	3-4	5	3-4	5
Inside Diameter..... inches	2 ⅜	2 ⅜	2 ½	2 ⅞	3 ¼	3 ⅞
Price..... per dozen	3.50	4.00	5.50	6.50	8.50	9.50

DOUBLE BOLT CLAMPS

*Size..inches	4	4 ¼	4 ½	4 ¾	5	5 ¼	5 ½	5 ¾	6	6 ¼	6 ½	6 ¾	7
Price per doz.	11.25	13.75	15.25	16.75	18.25	19.75	21.25	22.75	24.25	26.00	28.00	30.00	32.00
*Size..inches	7 ¼	7 ½	7 ¾	8	8 ¼	8 ½	8 ¾	9	9 ¼	9 ½	9 ¾	10	....
Price per doz.	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00	50.00	52.00	54.00	56.00	....

*Measurement of inside diameter.

CALDWELL HOSE STRAPS



Fig. 912B



Fig. 912C

CALDWELL HOSE STRAPS

Hose..... inches	½	½	¾	¾	1	1	1 ¼	1 ¼	1 ½	1 ½
Length..... inches	3 ¾	3 ¾	4 ½	4 ½	5	5 ¾	6	6 ¾	6 ¾	7 ½
Price..... per dozen	.40	.40	.60	.60	.80	.80	1.00	1.00	1.20	1.20

HOSE STRAP FASTENERS

Size..... inches	½ to 1	1 ¼ to 1 ½
Price..... each	.50	.75

HOSE MENDERS



Fig. 912D Iron

IRON HOSE MENDERS.

	Per doz. Plain	Per doz. Galvanized
½ inch.....	\$1.00	\$1.10
¾ inch.....	1.10	1.20
1 inch.....	1.25	1.35

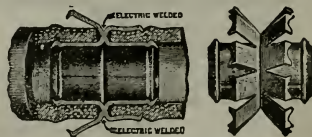


Fig. 912E Clincher

Improved Clincher Hose

All that is needed is a hammer to bend down the clamps on the hose to make a perfect mend.

Size, inches.....	½	¾	¾
Price each.....	\$0.10	\$0.10	\$0.10
Price per dozen.....	1.00	1.00	1.00
Weight per dozen, lbs..	1 ½	1 ¾	2 ½

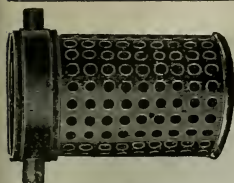


Fig. 907A

BRASS SUCTION HOSE STRAINERS

Size, inches	Price, each	Size, inches	Price, each
1 1/2	\$ 7.50	4	\$19.00
2	7.50	4 1/2	25.00
2 1/2	8.50	5	31.00
3	10.00	6	46.00
3 1/2	15.00	...	.....

GALVANIZED IRON LEAKY HOSE NOZZLES

BLACK IRON FOOT VALVES

BLACK IRON STRAINERS

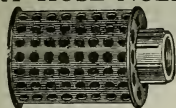


Fig. 907B



Fig. 907C



Fig. 907D

Size, inches	2 1/2	3	4	6	8
Leaky, each	\$1.50	2.00	3.30	....	....
Foot Valve, each	3.30	3.90	7.30	14.75	41.00
Black Iron, each	1.50	2.00	3.75	6.50	15.00



Fig. 26

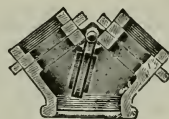


Fig. 29

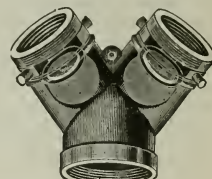


Fig. 31

Fig. 26. This Siamese is for use at the base of an outside, exposed standpipe in connection with fire escape. Fig. 26 is made with a Clapper Valve so that one or both streams can be used.

LIST PRICES, SIAMESE, FIG. NO. 26.

Rough Finish.

2 1/2 x 2 1/2 x 2 1/2 inches	each	\$10.00	3x3x3 inches	each	\$18.00
2 1/2 x 2 1/2 x 3 inches	"	10.00	3x3x3 1/2 inches	"	18.00
2 1/2 x 2 1/2 x 4 inches	"	10.00	3x3x4 inches	"	18.00
2 1/2 x 2 1/2 x 5 inches	"	13.00			

Net extra for polishing \$1.00 each.

Fig. 29 is a short, straight Siamese with one clapper, as shown in the cut. It is intended to be used in connection with inside standpipe or automatic sprinkler systems, where the standpipe emerges at right angles to the wall.

LIST PRICES, SIAMESE, FIG. NO. 29

Rough Finish.

2 1/2 x 2 1/2 x 3 inches	each	\$ 9.50
2 1/2 x 2 1/2 x 4 inches	"	9.50
3x3x6 inches	"	24.00

Fig. 31. This style of Siamese Connection is designed for what is called the wet system for fire protection in a building where the water remains continually in the standpipe, and it is provided with two valves which act independently of each other. This Siamese may be used either with the wet or dry system.

LIST PRICES, SIAMESE, FIG. NO. 31

Rough Finish.

2 1/2 x 2 1/2 x 4 inches	each	\$16.50	2 1/2 x 2 1/2 x 6 inches	each	\$24.00
2 1/2 x 2 1/2 x 5 inches	"	16.50	3x3x4 inches	"	24.00
2 1/2 x 2 1/2 x 5 inches	"	20.00			

Net extra for polishing \$2.00 each.



The Rubberhide Way RUBBERHIDE BOOTS The Ordinary Way

Leather soled rubber boots cost money. A low grade boot costs less, does not wear long, and cannot be made watertight. It is not what you pay but what you get out of a boot that counts.

Rubberhide boots are of the best known construction. The uppers are the best that can be put into such a boot. Made by people who know the rubber game from start to finish. The leather is cut from bends only; no bellies, shoulders or heads; high priced and has the wear. There is an added heel protection that is easily worth a dollar, and which no other boot of this kind has.

Rubberhide boots can be resoled. This feature alone is one that no manufacturer can boast—economically. Nearly all Rubberhide boots are resoled wherever used; it adds one third to their value. They are light, which means much in a day's work, and are much more comfortable than the average boot of this kind.

Note the illustrations at the top of the page. They show the cross section views of the Rubberhide and the average nailed leather soled rubber boot. The advantages of the Rubberhide are at once apparent. The most important feature is that the Rubberhide is absolutely watertight. Then note the different layers of rubber and leather that add to the protection rendered against water, mud, concrete or moisture of any kind.

Now look at the other cut. It is typical of all nailed boots. It is practically nothing more than a rubber boot with a leather insole and the outer sole nailed on, or a cheap sole nailed through the insole and an outer sole nailed to this. The place where leaks come is between the upper and first sole—which is nailed on, not sewed.

Compare these two demonstrations closely. They show exactly how you make money by buying Rubberhide boots in preference to any other boot made. A boot fifty cents cheaper than Rubberhides is a mighty high priced boot when you figure that you must buy one-third more boots to get the same amount of service. No matter what you pay for boots, Rubberhides will save you money.

The "EZOA" Shoe is made with the same construction as the Rubberhide Boot in every respect. It is used principally in creameries, breweries and places where a rubber boot is not necessary or desired. It is light in weight, flexible, and does not tire the feet like an ordinary rubber boot. The leather insole prevents this. Furnished plain or hobnailed.

PRICES

Per pair

Short, or Knee Boots.	\$7.50
Storm King, or Thigh.	8.25
Hip	8.75
Shoes, 7 inch.....	6.75
Shoes, 10 inch.....	7.00

The Isthmian Canal Commission used upwards of 2,200 pairs of Rubberhides. It proves most conclusively the superiority of this boot over all others.



RUBBER BOOTS



Fig. 916A Hip



Fig. 916B Knee



Fig. 916C Sporting

HIP BOOTS

There is no better general purpose boot than our Wales Goodyear. It is made with a gum leg and duck foot and has proved to be a satisfactory boot for severe service

Hip Boots Per pair net \$6.00

SHORT BOOTS

The yearly growth in the sale of our Wales Goodyear snag proof short boots convinces us that we have successfully responded to the demand from the consumer for a tough, shapely, well made boot that will withstand the severest service.

Short or knee boots Per pair net \$4.50

SPORTING BOOTS

Sporting boots are carried in two weights: light and heavy. The light weight are more popular, and are always sent unless otherwise specified.

Men's sporting gum..... \$6.00

We also carry a complete stock of second grade boots in the knee, sporting and hip boots, known as the Connecticut grade.

Connecticut Hip Boots. Price per pair.....\$5.75

Connecticut Knee Boots. Price per pair..... 4 25

"BULLSEYE" PRESSURE CURED BOOTS

This boot is the Original Pressure Cured boot and made under the original patents covering this process.

"Bullseye" boots are cured under great pressure in open steam, which process toughens the rubber and welds every part together so there are no loose spots and no seams which can come apart. Every part is cemented and lapped, making a double thickness where the different parts overlap each other.

They are made with a gray sole and gray foxing strip which extends over the edge of the boots, adding strength to the uppers and protection against rocks and snags. The sole extends under the heel which makes the shank solid and gives extra wear where it is most needed and as they are all made over aluminum lasts uniformity of sizes and a correct fit are assured.

"Bullseye" Boots are guaranteed by the manufacturers to give greater service and greater satisfaction to the wearer than any rubber boot on the market.

Price hip style\$6.50

Price knee style 4.75

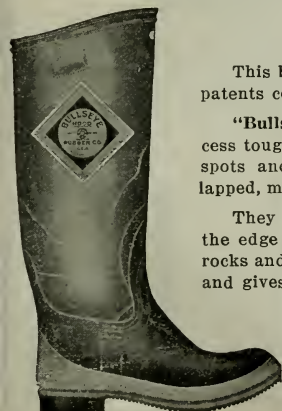


Fig. 916D Pressure Cured

WADING BOOTS, PANTS AND APRONS



Fig. 376C

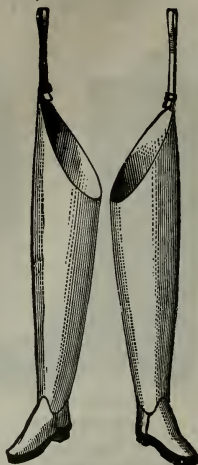


Fig. 376E

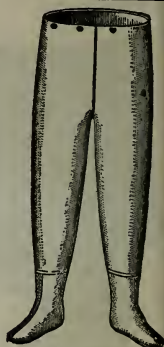


Fig. 376D



Fig. 376G

- Fig. 376C. Wading Pants with boots, dead grass color, weight 6 lbs., 5 oz.per pair \$20.00
 Fig. 376E. Wading Hip Boots, dead grass color, weight 3 lbs., 14 oz.per pair 18.00
 Fig. 376D. Wading Pants with stocking feet, dead grass color, weight 4 lbs., 12 oz.per pair 12.00
 Fig. 376G. Wading Pants with boots, dull finish, weight 7 lbs., 5 oz.per pair 15.00
 Fig. 376D. Wading Pants with stocking feet, dull finish, weight 3 lbs., 5 oz.per pair 12.00



Fig. 382I

Fig. 382H
Fig. 382K EXCELSIOR BRAND BARVEL
FOR FISHERMEN AND TANNERS
Black and Yellow

The Apron Barvel is made double throughout, with band to go over head and eyelets at side. Used by fishermen, cannors, packers, tanners and those engaged in similar work.

Width, 36 inches; length, 50 inches.

Fig. 382J EXCELSIOR BRAND DUCK APRON
FOR BUTCHERS OR TANNERS
Black and Yellow

This Apron is reinforced in the center, fitted with suspenders, buckle and leather strap at back.

Width, 40 inches; length, 50 inches.

We also carry a drill apron, same size as above, black and yellow, with round patch.

Fig. 382I STRING PANTS
ALL BRANDS

Tan, Black and Yellow

A very convenient style for use with Jackets.

Fig. 382H OVERALL APRON PANTS

ALL BRANDS

Tan, Brown, Black and Yellow

They are whole waisted and consequently cut very large, as the measurements indicate.

RUBBER APRONS

(Not illustrated)

For Buggy Washers

Light weighteach \$1.50

Heavy weighteach 2.00

Fig. 382L ICE APRONS

Regular double coated drill Apron. Made with two grommets at top to fasten around the neck and grommet on each side to fasten around waist. Average length 46 inches.

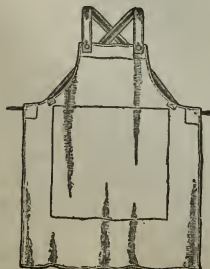


Fig. 382J



Fig. 382L

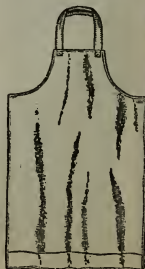


Fig. 382K

SAWYER'S SLICKERS

WHY SAWYER SLICKERS AND WATERPROOF CLOTHING ARE SUPERIOR

The best reason why it is to your interest to buy Sawyer Slickers and Waterproof Garments is because they are best.

Sawyer goods are made under the direct supervision of the owners of the business—every detail carefully watched, possible improvements searched out, quality kept up, rigid inspection maintained.

Highest grade materials are used, especially those most vital—the oils.
AND MARK THIS—

Every garment is coated five times, which is one more than in any other make.

And every coat is thoroughly seasoned before the next is applied.

Such carefulness has made Sawyer's lead for quality, and such final extra betterments give the satisfaction which all users of oiled clothing demand.

The next two pages show some of the Sawyer styles.

EXCELSIOR BRAND CLOTHING

Made from fine heavy sheetings especially woven for this brand from selected yarns and according to directions of the manufacturers as to count and weight. All seams are double-stitched and those liable to severe strain are treble-stitched differing thereby from any other make or brand of goods.

They are treated with a special compound that renders them thoroughly waterproof, imparting a soft, smooth finish that does not crack, peel or stick. Coats are made with soft woolen collars, and all garments are furnished with Sawyer's double fastened brass buttons that will not corrode, rust or pull off.

Every garment guaranteed.

LIGHT-HOUSE BRAND CLOTHING

Made double throughout from sheetings carefully selected.

They are double-stitched and thoroughly waterproof with a special compounds; also furnished with double fastened brass buttons.

Second only to Excelsior Brand in quality.



EXCELSIOR OIL DRESSING

One of the many advantages this line of waterproof goods possesses over any other is that when the surface becomes impaired through excessive wear it can easily be renewed by application of one or more coatings of Excelsior Oil Dressing. This can be applied with brush or sponge, and will dry in ten or twelve hours. A badly impaired surface requires two or three coatings; the garment should be allowed to dry between each application. By applying dressing to such spots as show wear, a garment may be preserved for years.

This dressing is put up in pint cans for black, yellow or brown clothing.

Price, per pint\$0.50



SAWYER'S EXCELSIOR BRAND SLICKERS



Fig. 22 Sliker



Fig. 201 Motor Coat



Fig. 363 Nobby Coat

EXCELSIOR BRAND SLICKERS

No. 22.

Made double throughout, trimmed with the improved "overlap" collar, faced with corduroy; storm lap; two "no-rip" pockets, inner sleeves and brass buttons that will not corrode or rust.

The "over-lap" collar is a new feature of real merit to this garment. It adds to its outward appearance, as well as gives absolute protection from the hardest storm, whether walking or riding.

Made in Yellow, Black and Olive.

Prices and sizes on following pages.

EXCELSIOR BRAND MOTOR COATS

No. 201—Black, Brown

Double throughout, trimmed with velvet lined 6 inch collar and throat tab, reinforced inner sleeves.

Two No-Rip pockets, long outside storm lap, which absolutely prevents water running into front. Brass buckles attached by brass rivets through leather stays.

No. 342—The long storm lap, fitted with brass buckles, prevents all water running in at front of coat, simple but positively effective, and has stood the test of service for twenty-five years. Waterproofed in Khaki and Olive colors.

Prices and sizes on following pages.

EXCELSIOR BRAND NOBBY COAT

No. 363—Dull Black

The Nobby is made of strong but light weight material and waterproofed in a dull black finish, renders this coat distinctive in the line of oiled garments. Lined shoulders and sleeves, rolling collar, with velvet faced collar band, two No-Rip pockets and inside interlocking storm laps in addition to its natty appearance and features that appeal to many desiring a lightweight serviceable waterproof coat.

Prices and sizes on following pages.

SAWYER SLICKER SUITS—OILED CLOTHING SIZES

EXCELSIOR BRAND SUITS

Excelsior Brand Jackets are made double throughout. The front opening is protected by a storm lap. Brass buttons for fastening.

Excelsior Brand Apron Pants are similar in style to the ordinary overall. Made double throughout. The side openings are furnished with brass buttons.

Excelsior Jackets and Apron Pants are made in yellow, black, brown and olive.

Excelsior Brand String Pants are made with draw string at waist. Yellow and black.

The combination makes a very serviceable Oil Suit for fishermen, teamsters, miners and farmers and all men who work out-of-doors.

Prices on Following Pages.



Fig. 212A Slicker Suit

SIZES OF OILED CLOTHING

Oiled Clothing is usually worn in cold, stormy weather, over heavy undergarments, and consequently the actual breast measurements of our garments are much larger than indicated by sizes over which they are intended to fit. Always state size when ordering.

MEN'S LONG COATS AND SLICKERS

Size	Actual Breast Measure inches	Sleeve from Center of Back, inches	Length inches
0 or 42	58	33 1/2	58
1 or 40	56	32 1/2	56
2 or 38	54	31 1/2	54
3 or 36	52	30 1/2	52

THREE-QUARTER OR MEDIUM COATS

Size	Breast, inches	Length, inches
0	42	43
1	40	43
2	38	43
3	36	43

APRON PANTS

Size	Waist, inches	Leg, inches
0	46	31
1	44	30
2	42	29
3	40	28

PANTS

STRING PANTS

Size	Waist, inches	Leg, inches
0	44	30
1	42	29
2	40	28
3	39	27

FROCKS OR HALF COATS

Size	Breast, inches	Length, inches
0	42	39
1	40	39
2	38	39
3	36	39

JACKETS

Size	Breast, inches	Length, inches
0	42	31
1	40	30 1/2
2	38	30
3	36	29 1/2

APRONS AND BARVELS

BUTCHER'S APRONS

Duck. Width 40 inches; length 50 inches.
Drill. Width 37 inches; length 46 inches.

APRON BARVELS

Width 36 inches; length 48 inches.

PRICE LIST
SAWYER'S OILED CLOTHING AND HATS

Price List No. 715. May 1, 1917.

Style No.	EXCELSIOR BRAND—Garments	Made in Colors	All Colors Per Dozen
20	Officers' Coats, leather bound.....	Yellow and black.....	\$57.20
21	Pommel Slickers, buttons.....	Yellow, black and olive.....	49.50
331	Pommel Slickers, buckles.....	Khaki and olive.....	59.40
22	Slickers.....	Yellow, black and olive.....	41.25
201	Motor Coats, buckles.....	Black, brown and khaki.....	48.40
202	Firemen's Coats, 46 in., buckles.....	Brown.....	44.00
353	Nobby Coats.....	Dull black.....	49.50
24	Medium Coats.....	Yellow, black and brown.....	34.65
25	Medium Coats, buckles.....	Yellow, black and brown.....	39.60
26	Half Coats.....	Yellow and black.....	31.90
27	Jackets.....	Yellow, black and brown.....	22.00
34	Jackets, buckles.....	Brown.....	25.85
28	Apron Pants.....	Yellow, black and brown.....	22.00
29	String Pants.....	Yellow and black.....	20.90
364	Boys' Coats.....	Black and yellow.....	27.50
366	Boys' Coats, buckles.....	Black and olive.....	34.65
30	Boys' Pommels.....	Yellow and black.....	39.60
31	Boys' Jackets.....	Yellow and black.....	19.80
32	Boys' Apron Pants.....	Yellow and black.....	19.80

EXCELSIOR BRAND—Sporting Garments

60	Men's Coats.....	Yellow.....	\$52.80
65	Ladies' Coats.....	Yellow.....	52.80
67	Boys' Coats.....	Yellow.....	27.50
66	Children's Coats.....	Yellow.....	23.65
63	Jackets.....	Yellow.....	33.00
64	Apron Pants.....	Yellow.....	31.90
68	Waist Pants.....	Yellow.....	31.90
375	Gunning Coats.....	Olive.....	44.00
389	Gunning Pants.....	Olive.....	31.90

LIGHT-HOUSE BRAND—Garments

420	Motor Coats, buckles.....	Yellow and black.....	\$44.00
410	Slickers.....	Yellow and black.....	37.40
422	Medium Coats.....	Yellow and black.....	31.07
424	Half Coats.....	Yellow and black.....	28.60
425	Jackets.....	Yellow and black.....	19.80
426	Apron Pants.....	Yellow and black.....	19.80
427	String Pants.....	Yellow and black.....	18.70

FISHERMEN'S GARMENTS—Soft Finish

EXCELSIOR BRAND			
600	Jackets, Double.....	Yellow and black.....	\$22.00
601	Pants, Double.....	Yellow and black.....	22.00
635	Jackets, Patched.....	Yellow and black.....	19.80
636	Pants, Patched.....	Yellow and black.....	19.80
LIGHT-HOUSE BRAND			
623	Jackets, Double.....	Yellow and black.....	\$19.80
624	Pants, Double.....	Yellow and black.....	19.80
627	Jackets, Patched.....	Yellow and black.....	18.15
628	Pants, Patched.....	Yellow and black.....	18.15

SAWYER'S OILED HATS

851	Storm, Pat'd.....	Black.....	\$ 8.25
852	Cape Ann.....	Yellow and black.....	7.15
863	Sun.....	Yellow and tan.....	13.75
854	Nobby.....	Black.....	7.15
856	Gossamer.....	Yellow and black.....	6.60
861	Gossamer, silk lined.....	Olive.....	9.90
857	Squam.....	Yellow and black.....	4.12
858	Squam, leathared.....	Yellow and black.....	4.40
864	Boys' soft.....	Tan.....	6.60

APRONS

Special Duck, Square patch.	Yellow or black.	40x50 inches.....	per doz.	\$18.60
Duck Aprons, lined. Oval patch.	Yellow or black.	40x50 inches.....	"	17.25
Drill Aprons, lined. Oval patch.	Yellow or black.	40x50 inches.....	"	10.80
Double Barvels, lined. Oval patch.	Yellow or black.	36x48 inches.....	"	12.50

HATS, GLOVES AND YACHT CLOTHING

Fig. 3S2A.
Miners'Fig. 3S2B.
Squam.Fig. 3S2C.
Sun (soft).Fig. 3S2D.
GossamerFig. 3S2E.
Cape Ann.

SEE OILED CLOTHING PRICE PAGE FOR
SIZES AND PRICES
OF THESE HATS AND SOU' WESTERS



Fig. 3S2F. Yacht.

Fig. 3S2G. Sawyer's
Storm.RUBBER GLOVES AND MITTENS
RUBBER GLOVESFig. 376A.
With
Gauntlet.

Style	Per dozen with Gauntlet	Per dozen without Gauntlet
Ladies' fine, tan or black.....	\$16.50	\$13.00
Men's fine, tan or black.....	18.00	15.00
Men's heavy, black.....	30.00	24.00
Men's acid, white 5 inch gauntlet.....	36.00	.....
Men's acid, white 9 inch gauntlet.....	39.00	.....

Fig. 376B.
Without
Gauntlet.

RUBBER MITTENS

Men's heavy, unlinedper doz. \$19.50
Men's heavy wool lined.....per doz. 22.50

RUBBER BUGGY APRONS

Sheetingeach \$2.10
Drilleach 2.40



Fig. 378B.

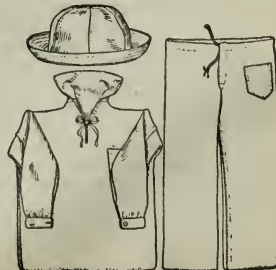
YACHT CLOTHING AND
SHOES

Fig. 378A.

	White Drill	Blue Denim	Tan Drill
Jumpers .....each	\$1.00	\$1.25	\$1.50
Trousers .....each	1.00	1.25	1.50
Hats .....each	.50	.60	.75

Dress Jumper, bleached white drill, blue collar and cuffs each \$3.00
Dress Trousers, bleached white drill.....each 1.50
White duck with black soles.....per pair .75
White duck with white soles.....per pair 1.25

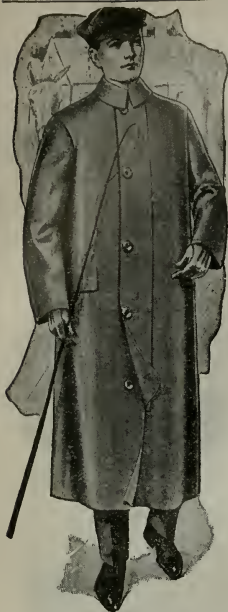


Fig. 918A Suffolk

Fig. 918B Red Stripe
MEN'S SUFFOLK

Fig. 918 Firemen's

Heavy double texture waterproof garment made of either tan covert outside with white sheeting lining; interlined with a fine coating of rubber. Storm fly front, ball and socket or snap fasteners, two outside pockets with flap. Coat is 52 inches long, has band collar fitting snug at neck. An excellent garment, constructed for hard service and general uses.

MEN'S WESTERN—Not Illustrated

This is a good quality of men's cloth surface rubber lined medium weight grey coat. Single breasted slot and buckle fasteners; corduroy tip collar; ventilated under arms; two outside pockets with flap; riveted collar, pockets and tail vent. This is a vulcanized coat, built for service, adapted for many purposes. It makes an excellent driving, riding or walking coat.

MEN'S RED STRIPE

This garment is made on a high quality of rubber coating, run on very fine fancy striped lining. It is made with plain band collar, slot and buckle fasteners, two outside pockets, with flap, back vent in skirt, and has double outside back. All seams are cemented and strapped, and we can especially recommend this garment.

MEN'S D. C. FIRE

This is made on a new quality of jean, coated on both sides with an extra fine quality of pure gum para rubber. It has snap and ring fasteners, storm fly front, strap at neck and sleeves. Seams sewed, cemented and strapped. 49 inches long. A high class coat in every way.

MEN'S BATES—Not Illustrated

Single breasted, buttoning through, square shoulders, vertical pockets, tab on sleeves, convertible collar, 50 inches long. Garment is sewed, cemented and strapped throughout, tail vent reinforced with wide facings. Cemented pockets, ventilated under the arms. A splendid model cut on up to date lines.

Cloth 4347/324—Fine black and white mixture, tweed effect, with plaid lining to match.

Cloth 4992/397 (velvet collar)—Fine dark oxford tweed with plaid lining to match.

Cloth 5523/90 (velvet collar)—Fine grade woolen mixture, oxford shade, knickerbocker lining, with plaid lining to match.

Cloth 5322/205—Fine high grade wool mixture, dark oxford tweed pattern with plaid lining to match.

In addition to the line of rubber coats listed above we carry in stock, a large line of models in rubberized and waterproofed cloth. These coats represent the latest models and fabrics and are cut on the best lines—in fact they are dress coats in every way and can be worn as an ordinary overcoat as well as a raincoat.

We will mail, upon request, sample swatches of the different patterns from which these coats are made.

COTTON WASTE

**POLISHING WHITE**

This Waste is made of nothing but pure mule spun quill cop thread, recognized as the finest available material for Waste, that will stand the test of polishing high grade furniture with absolute satisfaction. While it will also perform duties of other Waste, its long length and soft texture make it specially adaptable for polishing furniture, automobile bodies and similar surfaces. 100 lb. bales only.

EXTRA MACHINE COP

The best general commercial grade of White Waste obtainable. Made from single spun soft long yarn, and carrying absorbent and cleaning qualities that cannot be excelled. 100 lb. bales only.

NUMBER ONE WHITE

A strict No. 1 White Waste, carrying no rags or hard material to detract from its absorbent and cleaning properties, and differing only from Extra Machine Cop in class of thread. The threads used are of full absorbent quality though produced in different manner from that of the Cop, and the No. 1 White itself is a long soft absorbing Waste. For straight general use the No. 1 is a real No. 1 that cannot be discounted. Put up in 10 lb. packages, 10 to a bale, also in 25, 50, 100 and 500 lb. bales.

A—White

In marked contrast to some grades that are so sold, this is a No. 1 grade in every respect, as it carries no rag, nor harsh material to detract from its properties. For any ordinary purpose, including garage work, this grade will give absolute satisfaction where a long absorbent waste is wanted. In buying this grade you are securing a Waste that exceeds in quality many other brands of the so-called No. 1. 50 and 100 lb. bales.

B—White

Our "B" White Waste is a cheaper grade than the "A" and is made to meet conditions where a cheap white waste of this kind will answer the requirements. It contains a good portion of cotton threads, and has a good absorbing quality. 100 lb. bales.

SEMI-COLORED

Best grade of this class of Waste on the market, carrying all the essential properties of extra Machine Cop and No. 1 White combined, though containing a fair percentage of colored thread. The colored threads used, however, bear same relation to quality in their colored class as the Extra Machine Cop and No. 1 bear in the White. The colored threads make possible cheaper price. 100 lb. bales only.

FANCY COLORED

Occupying the same relative position among colored Wastes as Extra Machine Cop and No. 1 White do among different grades of White Waste, Fancy Colored is only made of straight colored thread. 100 lb. bales only.

A—COLORED

Surpassing all grades of colored Waste at or near the price. Mixed with no material that will detract from its proper functions, for general shop use where pure cotton product is a necessity, it is splendid value. 50 and 100 lb. bales.

B—COLORED

For rougher usage, where price is an object, this grade stands alone. Necessarily mixed to obtain the price, it still carries those virtues of length and absorption that make it particularly desirable and a grade to be sought for. 100 lb. bales only.

We also carry on hand at all times a complete stock of wiping cloths and sanitary rags, both white and colored. Furnished in 50, 100 and 500 lb. bales.

WOOL WASTE

Wool Waste, both in machine and skein form. Carried in stock in 100 lb. bales. Especially adapted for Journal Box Packing.

Cotton Duck

IN this department we carry a large and varied stock of cotton fabrics used by Tent and Awning Makers, Car Builders, Trunk Makers, Contractors, Sail Makers, Ship Builders, Railroads, Camp Furniture manufacturers, Wagon Builders, Roofers, Book Binders, etc.

In addition to Standard Ounce Ducks, Sail Ducks, Wide Ducks, Narrow and Heavy Naught Ducks, we are offering, under our famed "Lakeside" brand, a wonderful assortment of woven Awning Stripes, also Textol and Painted Stripes, and other special materials for this purpose in Khakis and imported solid color design.

In Waterproof Ducks we are selling agents for Tan Textol, a strong, flexible and highly satisfactory fabric. We also carry brown and white Paraffine Ducks, Black Oiled Ducks, "Five Star" Waterproof Ducks, the latter replacing to a larger extent the imported Belgian Flax Cloths which are not now on the market.

In Roofing Canvas we are western selling agents for the "Con-Ser-Tex" prepared canvas roofing, a waterproof and mildew-proof product, especially adapted for porch roofs and floors, or other flat surfaces where an absolutely watertight, durable and slightly covering is essential.

In Dyed Ducks and Drills we offer a large assortment of commercial dyed fabrics in slate, tan and brown; also genuine mineral dyed Khakis and fast colors in solid greens, blues, yellows, etc., for decorating, curtain and book binders' use.

In this same department are handled various closely related lines, such as Cotton Rope, Awning Braid, Threads, Fringes, Webbing, Tapes, Awning Hardware, Cotton Seine Twine, etc.

In short, no dependable canvas fabric or accessory known to the industry is omitted from our stock, and we are constantly adding new lines to take care of the increasing demands of the trade.

GEO. B. CARPENTER & CO.

COTTON DUCK

ALL STANDARD BRANDS

Our stock of Cotton Duck is without exception the largest and most varied in the country. We are agents for several of the standard brands, and can supply all widths and weights.

STANDARD WIDE DUCK

In rolls of about 100 yards each

LIST PRICE PER YARD—List Adopted July 9, 1917

Nos.	0	1	2	3	4	5	6	7	8	9	10	11	12	Nos.
26 inch	\$1.38	\$1.32	\$1.24	\$1.16	\$1.10	\$1.04	\$0.98	\$0.94	\$0.86	\$0.80	\$0.72	\$0.68	\$0.60	26 inch
28 inch	1.50	1.42	1.34	1.26	1.20	1.12	1.04	1.00	.92	.86	.78	.72	.64	28 inch
30 inch	1.60	1.52	1.42	1.34	1.28	1.20	1.12	1.08	.98	.92	.84	.78	.70	30 inch
32 inch	1.70	1.62	1.52	1.44	1.36	1.26	1.20	1.14	1.04	.98	.90	.82	.74	32 inch
34 inch	1.80	1.72	1.62	1.52	1.44	1.34	1.26	1.22	1.12	1.04	.94	.88	.78	34 inch
36 inch	1.92	1.82	1.72	1.62	1.52	1.42	1.34	1.28	1.18	1.10	1.00	.92	.82	36 inch
38 inch	2.02	1.92	1.80	1.70	1.62	1.50	1.42	1.36	1.24	1.16	1.06	.98	.88	38 inch
40 inch	2.12	2.02	1.90	1.80	1.70	1.58	1.48	1.42	1.30	1.22	1.12	1.02	.92	40 inch
42 inch	2.24	2.12	2.00	1.88	1.78	1.66	1.56	1.50	1.38	1.28	1.16	1.08	.96	42 inch
44 inch	2.34	2.22	2.10	1.96	1.86	1.74	1.64	1.56	1.44	1.34	1.22	1.12	1.00	44 inch
46 inch	2.44	2.32	2.18	2.06	1.94	1.82	1.70	1.64	1.50	1.40	1.28	1.18	1.06	46 inch
48 inch	2.60	2.46	2.32	2.20	2.08	1.94	1.82	1.74	1.56	1.48	1.36	1.26	1.12	48 inch
50 inch	2.70	2.56	2.42	2.28	2.16	2.02	1.90	1.82	1.66	1.54	1.42	1.30	1.16	50 inch
52 inch	2.82	2.66	2.52	2.38	2.24	2.10	1.96	1.88	1.74	1.60	1.48	1.36	1.20	52 inch
54 inch	2.92	2.78	2.62	2.48	2.34	2.18	2.04	1.96	1.80	1.66	1.52	1.40	1.26	54 inch
56 inch	3.04	2.88	2.72	2.56	2.42	2.26	2.12	2.04	1.86	1.72	1.58	1.46	1.30	56 inch
58 inch	3.14	2.98	2.82	2.64	2.50	2.34	2.20	2.10	1.94	1.78	1.64	1.52	1.34	58 inch
60 inch	3.28	3.10	2.94	2.76	2.64	2.46	2.32	2.22	2.04	1.88	1.72	1.60	1.42	60 inch
62 inch	3.38	3.22	3.04	2.86	2.74	2.54	2.40	2.30	2.10	1.94	1.78	1.64	1.46	62 inch
64 inch	3.50	3.32	3.14	2.94	2.82	2.64	2.46	2.36	2.16	2.00	1.84	1.70	1.52	64 inch
66 inch	3.60	3.42	3.22	3.04	2.90	2.72	2.54	2.44	2.24	2.08	1.90	1.74	1.56	66 inch
68 inch	3.72	3.52	3.32	3.14	3.00	2.80	2.62	2.52	2.32	2.14	1.96	1.80	1.60	68 inch
70 inch	3.82	3.62	3.42	3.22	3.08	2.88	2.70	2.58	2.38	2.20	2.02	1.86	1.66	70 inch
72 inch	4.06	3.84	3.62	3.42	3.22	3.02	2.82	2.70	2.50	2.30	2.10	1.94	1.72	72 inch
74 inch	4.16	3.94	3.72	3.50	3.32	3.10	2.90	2.78	2.56	2.36	2.16	2.00	1.78	74 inch
76 inch	4.28	4.06	3.82	3.60	3.42	3.18	2.98	2.86	2.62	2.42	2.22	2.04	1.82	76 inch
78 inch	4.38	4.16	3.92	3.70	3.50	3.26	3.06	2.94	2.70	2.50	2.28	2.10	1.88	78 inch
80 inch	4.50	4.26	4.02	3.80	3.60	3.36	3.14	3.00	2.76	2.56	2.34	2.16	1.92	80 inch
82 inch	4.70	4.46	4.20	3.96	3.74	3.50	3.28	3.16	2.88	2.66	2.44	2.24	2.00	82 inch
84 inch	4.82	4.56	4.32	4.06	3.84	3.58	3.36	3.22	2.94	2.74	2.50	2.30	2.04	84 inch
86 inch	4.94	4.68	4.42	4.16	3.94	3.68	3.44	3.30	3.02	2.80	2.56	2.36	2.10	86 inch
88 inch	5.04	4.78	4.52	4.24	4.02	3.76	3.52	3.36	3.08	2.86	2.62	2.40	2.14	88 inch
90 inch	5.16	4.88	4.62	4.34	4.12	3.84	3.60	3.44	3.16	2.92	2.68	2.46	2.20	90 inch
92 inch	5.38	5.10	4.80	4.52	4.28	3.98	3.74	3.58	3.28	3.04	2.78	2.54	2.28	92 inch
94 inch	5.48	5.20	4.92	4.62	4.38	4.08	3.84	3.66	3.36	3.10	2.84	2.62	2.32	94 inch
96 inch	5.60	5.32	5.02	4.72	4.46	4.18	3.90	3.74	3.42	3.18	2.90	2.68	2.38	96 inch
98 inch	5.82	5.52	5.22	4.90	4.64	4.34	4.06	3.88	3.56	3.30	3.02	2.78	2.46	98 inch
100 inch	5.94	5.64	5.32	5.00	4.74	4.42	4.14	3.96	3.64	3.36	3.08	2.82	2.52	100 inch
102 inch	6.06	5.74	5.42	5.10	4.84	4.52	4.22	4.04	3.70	3.42	3.14	2.88	2.56	102 inch
104 inch	6.18	5.86	5.54	5.20	4.94	4.60	4.32	4.12	3.78	3.50	3.20	2.94	2.62	104 inch
106 inch	6.42	6.08	5.74	5.40	5.12	4.78	4.48	4.28	3.92	3.62	3.32	3.04	2.70	106 inch
108 inch	6.54	6.20	5.86	5.50	5.20	4.86	4.56	4.36	4.00	3.70	3.38	3.10	2.76	108 inch
110 inch	6.66	6.30	5.96	5.60	5.30	4.96	4.64	4.44	4.06	3.76	3.44	3.16	2.80	110 inch
112 inch	6.78	6.42	6.06	5.72	5.40	5.04	4.72	4.52	4.14	3.82	3.50	3.22	2.86	112 inch
114 inch	7.13	6.77	6.39	6.02	5.69	5.31	4.97	4.75	4.35	4.02	3.68	3.37	3.00	114 inch
116 inch	7.27	6.88	6.50	6.12	5.79	5.40	5.06	4.83	4.43	4.09	3.74	3.43	3.05	116 inch
120 inch	7.52	7.12	6.73	6.33	5.99	5.59	5.23	5.00	4.58	4.23	3.87	3.55	3.15	120 inch
128 inch	8.30	7.86	7.42	7.00	6.60	6.16	5.78	5.50	5.04	4.66	4.26	3.90	3.48	128 inch
132 inch	8.98	8.52	8.04	7.56	7.12	6.66	6.24	5.94	5.46	5.04	4.60	4.20	3.74	132 inch
136 inch	10.44	9.88	9.34	8.78	8.30	7.74	7.24	6.88	6.30	5.80	5.40	4.76	4.28	136 inch
144 inch	11.04	10.46	9.88	9.30	8.78	8.20	7.66	7.28	6.66	6.14	5.60	5.04	4.54	144 inch

Nos. 4, 6, 8, 10 and 12 inch widths; 26 to 120 inches, usually in stock.

Enameling Duck, 38, 46, 51, 57, 60 and 72 inches.

COTTON DUCK

SAIL DUCK

STANDARD BRANDS

HARD, SOFT AND MEDIUM

List Price Per Yard. July 9, 1917

List July 9, 1917

No.	22 inch	24 inch	No.	22 inch.	24 inch
2/0	\$1.28	\$1.40	6	\$0.88	\$0.96
0	1.22	1.32	7	.84	.92
1	1.16	1.26	8	.80	.86
2	1.08	1.18	9	.76	.82
3	1.02	1.12	10	.70	.76
4	.98	1.06	11	.66	.72
5	.92	1.00	12	.62	.68

NAUGHT DUCK

List July 9, 1917

Nos.	3/0	4/0	5/0	6/0	8/0	10/0	12/0
12 in.	\$0.78	\$0.82	\$0.86	\$0.90	\$0.96	\$1.04	\$1.12
14 in.	.89	.94	.98	1.03	1.10	1.19	1.28
15 in.	.95	1.00	1.05	1.10	1.18	1.28	1.36
16 in.	1.00	1.06	1.12	1.17	1.26	1.36	1.46
18 in.	1.13	1.20	1.26	1.32	1.42	1.52	1.64
20 in.	1.23	1.30	1.36	1.42	1.54	1.66	1.78
22 in.	1.34	1.41	1.48	1.54	1.66	1.80	1.92
24 in.	1.47	1.54	1.61	1.68	1.82	1.96	2.10
26 in.	1.53	1.60	1.68	1.75	1.90	2.05	2.18
28 in.	1.64	1.72	1.80	1.88	2.04	2.20	2.34
30 in.	1.76	1.84	1.93	2.02	2.18	2.35	2.52

EXTRA NARROW DUCK

4 to 12 inches

List July 9, 1917

Nos.	2/1	1/0	1	2	3	4	5	6	7	8	9	10	11	12
4 in.	50	48	46	42	40	38	36	32	30	28	26	22	20	18
5 in.	54	50	48	46	42	40	38	36	32	30	28	26	22	20
6 in.	56	52	50	48	44	42	40	38	36	32	30	28	24	22
7 in.	58	54	52	50	46	44	42	40	38	34	32	30	28	24
8 in.	62	58	56	52	50	48	46	42	40	38	36	32	30	26
9 in.	66	62	60	56	54	50	48	46	44	40	38	36	32	30
10 in.	70	66	64	60	58	54	52	50	48	44	40	38	36	32
11 in.	72	70	66	64	62	58	56	54	50	46	44	40	38	34
12 in.	74	72	70	66	64	62	58	56	52	48	46	42	40	38

PAPER MFRS. DRYER FELTS

26 inch to 60 inch inclusive..	Per lb.	\$0.82
61 inch to 120 inch inclusive..	"	.72
121 inch to 132 inch inclusive..	"	.74
133 inch to 144 inch inclusive..	"	.76
145 inch to 166 inch inclusive..	"	.80
167 inch to 184 inch inclusive..	"	.84
185 inch to 204 inch inclusive..	"	.94
205 inch to 240 inch inclusive..	"	1.08

NARROW DUCK

Over 12 inches

List July 9, 1917

No.	14 inch	16 inch	18 inch	20 inch
00	\$0.84	\$0.96	\$1.08	\$1.18
0	.80	.92	1.02	1.12
1	.76	.86	.96	1.08
2	.72	.82	.92	1.02
3	.70	.78	.88	.96
4	.68	.74	.84	.92
5	.64	.70	.78	.86
6	.60	.66	.74	.82
7	.56	.64	.70	.78
8	.52	.60	.66	.74
9	.50	.56	.62	.70
10	.48	.54	.58	.66
11	.46	.52	.56	.62
12	.44	.48	.52	.58

YACHT DUCK

List July 9, 1917

No.	14 inch	16 inch	18 inch
00	\$1.02	\$1.16	\$1.30
0	.96	1.10	1.22
1	.92	1.04	1.16
2	.88	1.00	1.10
3	.84	.94	1.06
4	.80	.90	1.02
5	.76	.84	.96
6	.72	.80	.90
7	.68	.76	.84
8	.64	.72	.80
9	.60	.68	.76
10	.58	.66	.72
11	.56	.62	.68
12	.54	.58	.64

COTTON DUCK

OUNCE DUCK

ARMY DUCK

List July 9, 1917

28½ inches

Bales about 600 yards. Pieces about 50 yards

Made according to the specifications of the
United States Government

7 oz., 28½ inches.....	\$0.46
8 oz., 28½ inches.....	.50
9 oz., 28½ inches.....	.56
10 oz., 28½ inches.....	.61
12 oz., 28½ inches.....	.72
15 oz., 28½ inches.....	.92

DOUBLE FILLING

This Duck is made of two or more double and
twisted yarns in the filling, with double thread
warp.

Bales about 800 yards.

Bolts about 50 yards.

BRANDS

Kenwood, Monarch, Selkirk, Dreadnaught

8 oz.	29 inches wide
9 oz.	29 inches wide
10 oz.	29 inches wide
12 oz.	29 inches wide
15 oz.	29 inches wide
10 oz.	36 inches wide
12 oz.	36 inches wide
10 oz.	40 inches wide
8 oz. Fabric	56 inches wide
8 oz. Fabric	60 inches wide
8 oz. Fabric	72 inches wide

SINGLE FILLING

This Duck is made of a single twisted yarn in
both filling and warp.

Bales about 800 yards.

Bolts about 50 yards.

BRANDS

Oregon, Lakewood, Magnolia, Lakeview

7 ounce ..29 in. wide	8 ounce ..36 in. wide
8 " ..29 " "	10 " ..36 " "
9 " ..29 " "	12 " ..36 " "
10 " ..29 " "	7 " ..40 " "
11 " ..29 " "	9 " ..40 " "
12 " ..29 " "	10 " ..40 " "
15 " ..29 " "	11 " ..40 " "

SPECIAL YACHT DUCK

28½ Inch

7 ounce	\$....	10 ounce	\$....
8 "	12 "	12 "	15 "
9 "	15 "		

YACHT DUCK

28½ Inch

7 ounce	\$....	10 ounce	\$....
8 "	12 "	12 "	15 "
9 "	15 "		

TWILLS AND DRILLS

Bales about 1000 yards. Pieces about 50 yards

30 inch, 325	\$....
30 inch, 300	
30 inch, Standard 285	
30 inch, 250	
30 inch, 5½ oz. Yacht Twill.....	
30 inch, 6¾ oz. B. C. Special Yacht Twill	
31 inch, 8 oz. G. B. C. Special Yacht Twill	
37 inch, Standard Drill 235	
37 inch, 8 oz. Twill	

IMPORTED UNION SILK

For Fancy Yacht Sails, 36 inches wide

No. 7	\$....
No. 8	
No. 9	
No. 10	
No. 11	

G. B. C. SPECIAL SAIL CLOTH

30 inch	\$....
39 "	

B. C. SPECIAL SAIL CLOTH

30 inch, No. 1.....	\$....
30 " " 2.....	

We make a specialty of fine fabrics, both
domestic and imported, for yacht sails, and can
be depended on for all the up-to-date goods in
this line.

WOOL BUNTING

U. S. Bunting Co.

Rolls 40 yards each

Red, White, Blue, Green, Black, Yellow

18 in. Standard \$....	24 in. Yacht... \$....
24 " "	18 " Anchor... ..
18 " Yacht... ..	24 " " ..
18 in. R. R. Signal..	\$....

COTTON DUCK

COLORED DUCK

DOUBLE AND SINGLE FILLING

Bales About 800 Yards. Pieces About 50 Yards
28 Inches Wide
Black, Tan, Brown and Slate

7 oz., 28 in.	\$.....
8 oz., 28 in. ....	.....
9 oz., 28 in. ....	.....
10 oz., 28 in. ....	.....
12 oz., 28 in. ....	.....
11 oz., 38 in. S. F. Brown. ....	.....

BOOKBINDERS' AND TRUNK-MAKERS' DUCK

Below is a Partial List of the Special Duck We
Carry

44 in. drab and slate, Lewiston No. 1.	\$.....
44 in. slate and brown, Lewiston No. 2. ....	.....
44 in. drab, D. F. linen finish. ....	.....
40 in. salmon or baker plaid. ....	.....
40 in. starched open pick, 7 1/2, 9 and 10 ounce. ....	.....

HOSE DUCK

Rolls About 100 to 200 Yards. 40 Inches Wide

Open Weave, Giving Heavy Appearance; for
Trunk-Makers and Rubber Manufacturers

10, 12, 14, 16, 18 and 20 Ounce

BLACK ENAMELED TRUNK DUCK, GLAZED

In 12 Yard Pieces Only

44 in. No. 8 standard duck.	\$.....
44 in. No. 10 standard duck. ....	.....
44 in. No. 12 standard duck. ....	.....
45 in. special. ....	.....

WIDE DUCK

Rolls About 100 Yards
Tan, Brown and Slate

44 in., No. 4.	\$.....
44 in., No. 6. ....	.....
44 in., No. 8. ....	.....
44 in., No. 10. ....	.....
50 in., No. 10. ....	.....
60 in., No. 10. ....	.....
Any Width or Weight Dyed to Order	

ENAMELED GOODS

List Price Per Yard

4-4 black enameled muslin.	\$0.39
5-4 black enameled muslin. ....	.42
6-4 black enameled muslin. ....	.53
4-4 black enameled drill. ....	.58
5-4 black enameled drill. ....	.60
50 in. black enameled drill. ....	.64
6-4 black enameled drill. ....	.74
38 in. black enameled duck. ....	.72
5-4 black enameled duck. ....	.76
50 in. black enameled duck. ....	.80
6-4 black enameled duck. ....	.88
60 in. black enameled duck.	1.08
5-4 tan back drill. ....	.78
48 in. tan back drill. ....	.82
5-4 imitation gum drill. ....	.60
50 in. imitation gum drill. ....	.64
50 in. leather cloth.	1.70
6-4 in. leather cloth.	1.82
60 in. leather cloth.	1.94
Colored back muslin, additional. ....	.08
Colored back drill and duck. ....	.14
Figured or printed back, additional. ....	.10
5-4 green and brown muslin. ....	.53
6-4 green and brown muslin. ....	.67
5-4 yellow, drab, blue and imitation crim- son muslin. ....	.67
Green and brown drill and duck, addi- tional. ....	.20
Yellow, drab, and blue drill, and duck, additional. ....	.32
Oil back, additional. ....	.28
5-4 English Moleskin.	1.76
Cream, tan, russet and white shoe goods	.46
Green, brown, chocolate, wine and all other colors. ....	.46
Double japanned, additional. ....	.80

COTTON DUCK

FOR

Tents, Awnings, Sails, Paulins, Horse and Wagon Covers, Stack and Machine covers, Boat Covers, Floor Cloths, Clothing, Harvester Aprons, Belting and Hose, Bookbinders, Trunk-makers, Upholsterers, Sporting Goods, Scenery and Drop Cloths, Mail Bags, Coal Bags, Feed Bags, Tool Bags, Coin Bags; ROOF-
ING—Cars, Buildings, Verandas, Boat Decks.

COTTON DUCK

WATER PROOF DUCK

PARAFFINED OUNCE DUCKS

Water and Mildew Proof

List Nov. 15, 1916

		White	Brown
8 oz., 28 ½ in. Superior	.....	\$0.62	\$0.76
10 oz., 28 ½ in. Superior	.....	.74	.88
12 oz., 28 ½ in. Superior	.....	.84	1.00
13 oz., 37 ½ in. Superior (10 oz. Fabric)	.....	.96	1.12
10 oz., 36 in. Superior (8 oz. Fabric)	.....	.78	.92
11 oz., 40 in. Superior (8 oz. Fabric)	.....	.82	.98

Also 8, 10 and 12 oz. 28 in. and 12 oz. 36 in.
Double Filled Brown

PARAFFINED WIDE DUCKS

	White				Brown			
In.	No. 6	No. 8	No. 10	No. 12	No. 6	No. 8	No. 10	No. 12
36	\$1.58	\$1.40	\$1.18	\$0.98	\$1.76	\$1.56	\$1.34	\$1.14
40	1.76	1.54	1.32	1.10	1.92	1.70	1.48	1.28
42	1.84	1.62	1.38	1.16	2.00	1.80	1.54	1.32
44	1.94	1.70	1.44	1.20	2.10	1.86	1.60	1.36
46	2.00	1.76	1.52	1.28	2.18	1.94	1.68	1.44
48	2.12	1.84	1.60	1.34	2.30	2.00	1.78	1.52
50	2.22	1.96	1.68	1.40	2.44	2.16	1.88	1.60
54	2.40	2.12	1.80	1.52	2.60	2.32	2.02	1.74
60	2.70	2.38	2.02	1.72	2.94	2.62	2.26	1.94
66	2.98	2.62	2.24	1.98	3.22	2.86	2.48	2.10
72	3.32	2.92	2.46	2.06	3.58	3.18	2.72	2.32

Number 10 and Ounce Duck is kept in stock.
The other numbers are finished to order.

TAN TEXTOL

Tan colored, chemically treated, soft and pliable.

We recommend these goods for protection against rain and water.

No. 105, 28 ½	inches, rolls 200 yards.....	\$
No. 125, 28 ½	inches, rolls 200 yards.....	..
No. 145, 28 ½	inches, rolls 200 yards.....	..
No. 125, 36	inches, rolls 100 yards.....	..
No. 145, 36	inches, rolls 100 yards.....	..
No. 9, 37	inches, rolls 100 yards.....	..
No. 10, 60	inches, rolls 100 yards.....	..
No. 10, 72	inches, rolls 100 yards.....	..
No. 10, 84	inches, rolls 100 yards.....	..

BLACK OILED DUCK

WATERPROOF

We guarantee our goods not to stick or crack, and to be absolutely waterproof.

Inch	No. 214	No. 10	No. 12
36	\$0.48	\$1.43	\$1.21
40	....	1.60	1.35
44	.58	1.75	1.47
48	....	1.94	1.64
50	.63	2.03	1.70
54	....	2.17	1.85
56	.70	....	....
60	.75	2.45	2.08
66	....	2.71	2.28
72	.90	2.99	2.51
84	....	3.55	2.97

Above are stock sizes. Other widths to order.

YELLOW OILED DUCK

WATERPROOF

These goods are used by many in preference to the Black Oiled.

29 in., 10 oz.	.....
36 " No. 10.	.....
48 " " 10.	.....
54 " " 10.	.....
60 " " 10.	.....
72 " " 10.	.....
84 " " 10.	.....
96 " " 10.	.....

WILFORD MATCHLESS WATER-PROOF CLOTH

IMPORTED

For Hatch Covers, Paulins, etc., 40 ½ in. Wide

These goods are made in Belgium from selected flax; they are dyed a dark brown, and are chemically treated in a way which renders the fabric waterproof without destroying the strength or flexibility of the fiber.

OLD CANVAS

We have in stock at all times, Old Sails, and can furnish at short notice anything made of same.

COTTON DUCK

"LAKESIDE" AWNING STRIPES

(Registered)

Pieces about 50 yards each. Cases about 1,000 yards each

Standard Duplex, Blue, A. D. G. I. T.	31 in.	Lehigh, Nos. 13 and 14.....	31 in.
Standard Duplex, Brown, A. D. G. I. S. T.	31 in.	10 oz. Army, Blue and Brown, Nos. 300	
Standard Duplex, Tan, Nos. 22, 24 and 25.....	31 in.	and 301	28½ in.
Standard Duplex, Green, Nos. 32, 33 and 34.....	31 in.	9 oz. Army, Blue, Nos. 400, 500, 505	
Yale, Blue, Nos. 40, 41, 42, 43, 44 and 46.....	31 in.	and 510	28½ in.
Van Dyke, Brown, Nos. 52, 53 and 54.....	31 in.	9 oz. Army, Brown, Nos. 401, 600, 605	
Princeton, Tan, Nos. 60, 61, 63, 64, 65.....	31 in.	and 610	28½ in.
Illinois, Tan, Nos. 70, 71, 72, 73, 74, 75, 80,		9 oz. Army, Tan, Nos. 700, 705, 710, 715	
81	31 in.	and 720	28½ in.
Dartmouth, Green, Nos. 120, 121, 123, 124,		9 oz. Army, Green, Nos. 800, 805, 810	
125 and 128.....	31 in.	and 815	28½ in.
Harvard, Red, Nos. 140, 142, 143 and 144.....	31 in.	Tan Twill Stripe.....	36 in.
Chicago, Terra Cotta, No. 164.....	31 in.	Car Curtain, B. B.....	32-38 in.
Carlisle, Nos. 3 and 4.....	31 in.	Awning Ducks, Red	29 in.
		Awning Ducks, Green	29 in.
		Awning Ducks, Blue	29 in.
		Awning Ducks, Yellow	29 in.
		Awning Ducks, Tan	29 in.

FANCY STRIPES

We carry a very complete assortment of Fancy Awning Stripes and we are constantly getting up novelties in these goods.

We issue, every spring, a sample book, showing over 100 patterns of stripes, which we send to the trade without charge.



For All Roofing Purposes. Particularly Adapted for Porch Roofs and Piazza Floors

Con-Ser-Tex is a specially woven cotton fabric, scientifically treated by chemical processes to preserve the fibre from mildew germs. The canvas is so impregnated that paint will not come in direct contact with the cotton fibre; consequently the detrimental action of oil is eliminated.

No oils or injurious pigments are used to fill the goods. Both sides are finished with a "tooth" to which paint readily adheres, but our treatment keeps paint from destroying the fibre.

PER LINEAL YARD

	E	G	I
Widths			
30 inch	\$1.06	\$1.18	\$1.44
36 inch	1.28	1.42	1.62

Other widths processed to order

DIRECTIONS

Paint the wood roof or deck with one heavy coat of lead in oil paint, and lay the brown side down, while the paint is wet. This is not absolutely essential, but will give better results, as the brown side is finished in surplus and combines ingredients that form a perfect cement when fully oxidized.

Laps of canvas to be 1½ inch. Galvanized or copper tacks to be ¾ inch apart, to be tacked while being slightly stretched.

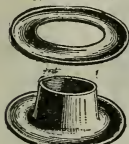
After it has been laid and set, paint the tanned or primed side with a light coat of good lead in oil paint; add a second and heavier coat after the first is thoroughly dry.

Con-Ser-Tex is very easily laid and does not require much paint, being already primed. The chemicals used contain no oils or injurious pigments.

Owing to the special construction of the fabric and the advantages of the processing, Con-Ser-Tex presents a neater appearance than other roofing.

GROMMETS

SHEET BRASS WASHER



SHEET WASHER GROMMETS

No.	Diam. of Hole Inserted inches	Per gross
00	$\frac{1}{8}$	....
0	$\frac{7}{32}$	....
1	$\frac{15}{64}$	....
2	$\frac{3}{8}$	....
3	$\frac{7}{16}$	....
4	$\frac{1}{2}$	....
5	$\frac{5}{8}$	....

SHEET BRASS TEETH

No.	Diam. of Hole Inserted inches	Per gross
0	$\frac{7}{32}$	.....
1	$\frac{5}{16}$	.....
2	$\frac{3}{8}$	.....
3	$\frac{7}{16}$	.....
4	$\frac{1}{2}$	.....
5	$\frac{5}{8}$	.....

CONICAL POINTED, ROLLED RIM BRASS GROMMETS

No.	Diam. of Hole Inserted inches	Per gross
2	$\frac{3}{8}$	\$2.00
3	$\frac{7}{16}$	2.70
4	$\frac{1}{2}$	3.60
5	$\frac{5}{8}$	4.75
6	$\frac{3}{4}$	6.25
7	$\frac{7}{8}$	8.50
8	1 $\frac{1}{16}$	10.00

SHEET BRASS SPUR GROMMETS

No.	Diam. of Hole Inserted inches	Per gross
0	$\frac{1}{4}$	\$1.60
1	$\frac{5}{16}$	1.80
2	$\frac{3}{8}$	2.00
3	$\frac{7}{16}$	2.70
4	$\frac{1}{2}$	3.60
5	$\frac{5}{8}$	4.75
6	$\frac{3}{4}$	6.25
7	$\frac{7}{8}$	8.50
8	1 $\frac{1}{16}$	10.00

SMALL OBLONG BRASS GROMMETS

Size of Opening
when Inserted
 $\frac{11}{16} \times \frac{3}{16}$ in. .gro.
 $\frac{7}{16} \times \frac{1}{16}$ in. ."

GALVANIZED GROMMET RINGS

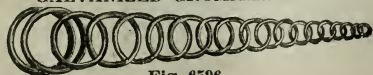


Fig. 6596
In Bulk

GROMMET OR CARPET KNOBS

No.	Length Head inches	Length Nail inches	Per gross
0	$\frac{3}{32}$	$1\frac{1}{8}$	\$3.00
1	$\frac{1}{16}$	$1\frac{1}{8}$	3.00
2	$\frac{5}{16}$	$1\frac{5}{8}$	4.00
3	$\frac{3}{8}$	$1\frac{3}{4}$	7.00
4	$1\frac{1}{4}$	$1\frac{1}{2}$	7.50

For use with No. 3 Conical Pointed Grommets or No. 3 Spur Grommets in putting down carpets in railroad cars, steamboats, halls, etc.

SHEET BRASS EYELET GROMMETS

No.	Diam. at Bottom inches	Per gross
1	$\frac{3}{8}$	\$1.15
2	$\frac{1}{2}$	1.35
3	$\frac{5}{8}$	1.60
4	$\frac{3}{4}$	1.80
5	$\frac{7}{8}$	2.25
6	1	2.70
7	$1\frac{1}{8}$	3.15
8	$1\frac{1}{4}$	5.00
10	$1\frac{1}{2}$	7.00
15	$2\frac{1}{2}$	10.00

THREE-PART GROMMETS



No.	Diam. of Hole Inserted, inches	Per gross Brass
1	$\frac{1}{4}$	\$1.80
2	$\frac{5}{16}$	2.00
3	$\frac{3}{8}$	2.70
4	$\frac{1}{2}$	3.60
5	$\frac{5}{8}$	4.75
6	$\frac{3}{4}$	6.25
7	$\frac{13}{16}$	8.50
8	$\frac{15}{16}$	10.00
9	$1\frac{1}{16}$	12.00
10	$1\frac{1}{4}$	14.00

BRASS MAIL BAG GROMMETS

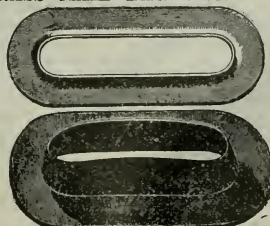


Fig. 6599. Opening Inserted			
Small, 1 1/4 x 3/8	.....	per gross	5.00
Large, 1 5/8 x 7/8	.....	" "	6.00
For Inserting Dies, see Index			

CUTTING PUNCHES

No.	Regular each	Side each
0	\$1.00	\$0.50
1	1.00	.50
2	1.20	.50
3	1.30	.65
4	1.50	.75
5	1.75	.80
6	2.00	1.00
7	2.25	1.50
8	2.50	1.75
9	2.75	2.25
10	3.00	2.50

Fig. 91
RegularFig. 92
Side

SETTING DIES

No.	For Washer and Teeth Grommets each	For C. P. R. R. and Spur Grommets each	For Eyelet Grom- mets each
0	\$2.00	\$2.00	....
1	2.15	2.15	\$2.15
2	2.25	2.25	2.25
3	2.35	2.35	2.35
4	2.50	2.50	2.50
5	2.70	2.70	2.70
6	3.00	2.80	2.80
7	....	3.00	3.00
8	....	3.25	3.25
9	....	....	3.50
10	....	....	4.50
15	....	....	15.00



Fig. 93

INSERTING
DIES AND
CUTTERS

For Small Oblong

No.	Dies each	Cutters each
1	\$5.00	\$2.00
2	6.00	2.50

For Mail Bag Grom-
mets, Small and Large
Dies each \$20.00
Cutters ... " 15.00



Fig. 101



Fig. 102

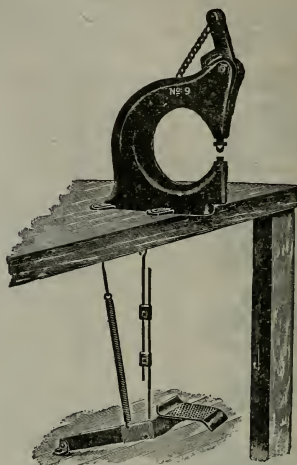
THE No. 9 GROMMET SETTING
MACHINE

Fig. 121. Foot Power

This Machine will set Nos. 0, 1, 2, 3 and 4 washer grommets and is furnished to set any one of the above sizes or all sizes desired. Has a 6 inch throat opening which is very desirable feature in working on bulky material. All parts are perfectly interchangeable, all working parts are of hardened steel, and are fully guaranteed as to workmanship and material.

No adjustment of any kind required.

Full instructions for setting up machine are packed in each box.

Finish 2 coats black enamel.

Weight, complete with foot power, 26 lbs.

Weight, complete for shipment, 35 lbs.

Machine only net \$8.50

Extra for dies to set Nos. 0, 1, 2, 3, 4
each size net 1.50

Hollow punches for canvas Nos. 0, 1, 2, 3;
each size net .50

Cutter plate for above punches; each
size net .25

THE "UNIVERSAL" GROMMET SETTING MACHINE

This Machine is just what you want for manufacturing or repairing awnings, tents, sails, or automobile covers and aprons. Is finished in black japan and gilt and guaranteed to do perfect work.

As carried in stock, is fitted to set Nos. 0, 1, 2 and 3 washer grommets, and is furnished complete for the four sizes, or the machine and any of the above sizes singly as desired.

The point is the part that screws in the upper plunger. The pocket is the part that fits in the bottom of machine. The parts are hardened steel and plainly marked to avoid confusion.

Can Be Used With Foot Power



Fig. 131

PRICES

Machine complete, 4 sizes \$3.50

Machine and 1 size 2.25

Parts to set, any one size, Nos. 0 to 3 per set .75

Extra for foot power attachment 1.00

AWNING HARDWARE

EYE ENDS

Tapped with Pipe Thread
LARGE EYES



Fig. 221

Galv'd No.	Black No.	Fits Size Iron	Fits Size Pipe
0	00	$\frac{3}{8}$	$\frac{1}{8}$
A	0A	$\frac{1}{2}$	$\frac{1}{4}$
1	01	$\frac{1}{2}$	$\frac{1}{4}$
1½	01½	$\frac{1}{2}$	$\frac{1}{4}$
2	02	$\frac{5}{8}$	$\frac{3}{8}$
3	03	$\frac{3}{4}$	$\frac{1}{2}$
4	04	1	$\frac{3}{4}$
5	05	1½	1

Nos. 0, 0½, 1 and 1 fit Hinges, % Nut Slides of our make.

No. 1½ fits % Nut Slides of other makes.

Nos. 2, 3, 4 Nos. 21 Cotter Hinges, Bracket Hinges, and 5 fit Double Arm Ends, Jaw Ends.

Nos. 43 and 44 Square Jaw Slides.

Nos. 0 and A have standard bolt threads. Nos. 1 to 5 have pipe threads.

EYE ENDS

Tapped with Pipe Thread
SMALL EYES



Fig. 222

Galv'd No.	Black No.	Fits Size Iron	Fits Size Pipe
10	010	$\frac{3}{8}$	..
B	0B	$\frac{1}{2}$	..
11	011	$\frac{1}{2}$	$\frac{1}{4}$
12	012	$\frac{5}{8}$	$\frac{3}{8}$
13	013	$\frac{3}{4}$	$\frac{1}{2}$
14	014	..	$\frac{3}{4}$

Nos. 10, 11, 12 and 13 fit { Nos. 30, 31 and 32 Jaw Slides, Nos. 1 and 2 Jaw Hinges, Old Style Jaw Plate Hinges.

Nos. 10 and B have standard bolt threads. Nos. 11 to 14 have pipe threads.

EYE STUBS

Eye takes a % diam. Bolt



Fig. 212

Galv'd No.	Black No.	Length
21	021	1
22	022	2
23	023	3
24	024	4

Screws into Nos. 1, 2, 3, 6 and 8 Plates

CARPENTER'S NEW PATENT AWNING HOOK

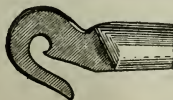


Fig. 211

This is our new patent hook end, which we believe will be universally used by the awning trade as a substitute for, and improvement on, the old style eye end.

Made in galvanized malleable iron, tapped with pipe thread to fit ½ in. iron.

FORK ENDS

Tapped with Pipe Thread



Fig. 231

Brass No.	Black No.	Threaded to Screw on to		Horns take Size Pipe
		Round Iron	Pipe	
12	012	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{8}$
22	022	$\frac{5}{8}$	$\frac{3}{8}$	$\frac{1}{2}$
23	023	$\frac{5}{8}$	$\frac{3}{8}$	$\frac{1}{2}$
24	024	$\frac{5}{8}$	$\frac{3}{8}$	$\frac{1}{2}$
33	033	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
34	034	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$

JAW ENDS

With % dia. Square Head Bolt or Cotter Rivet



Fig. 232

Galv'd No.	Black No.	Screws on to	
		Round Iron	Pipe
2	02	$\frac{5}{8}$	$\frac{3}{8}$
3	03	$\frac{3}{4}$	$\frac{1}{2}$

Takes Nos. 1, 1½, 2, 3, 4 and 5 Eye Ends.

JAW ENDS

With ¼ dia. Stove Bolt



Fig. 233

Galv'd No.	Black No.	Screws on to	
		Round Iron	Pipe
12	012	$\frac{5}{8}$	$\frac{3}{8}$
13	013	$\frac{3}{4}$	$\frac{1}{2}$

Takes Nos. 10, 11, 12 and 13 Eye Ends

JAW STUBS

With % dia. Square Head Bolts and Nut



Fig. 234A

Threaded with ¾ pipe thread. Screws into Nos. 1, 2, 3, 6 and 8 Plates. Take Nos. 2, 3, 4 and 5 Eye Ends.

JAW STUBS

With ¼ dia. Stove Bolts



Fig. 234

Galv'd No.	Black No.	Length Overall
12	012	2
13	013	3
14	014	4
16	016	6
18	018	8

Threaded with ¾ pipe thread. Screws into Nos. 1, 2, 3, 6 and 8 Plates. Take Nos. 10, 11, 12 and 13 Eye Ends.

AWNING HARDWARE

JAW HINGES

No. 1
with ScrewFig. 271
Use 1x8
Wood ScrewGalvanized
No. 2
with ScrewFig. 272
Use 1x12
Wood ScrewNo. 3
with ScrewFig. 273
Use 1x12
Wood Screw

These Jaw Hinges take our Nos. 11, 12 and 13 Eye Ends.

3 STAR PRESSED STEEL JAW HINGES

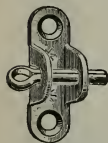


Fig. 274

No. 1, Cotter Pin, $\frac{3}{8}$ in. opening.



Fig. 275

No. 1, Machine Screw, $\frac{3}{8}$ in. opening.



Fig. 276

No. 2, Stove Bolt, heavy, $\frac{3}{8}$ in. opening.

No. 11 SIDE COTTER HINGES

Galvanized. Use a 1x10 Wood Screw.

Our No. 0A and No. 1 Eye Ends fit this Hinge.



Fig. 261

COTTER HINGES

(Front)

Galvanized Malleable Iron



Fig. 262

These Hinges take the place of the old No. 1 and No. 2 Jaw Hinges.

Our Nos. 0, $0\frac{1}{2}$ and 1 Eye Ends fit these Hinges.



Fig. 263

Number	Length inches	Use Wood Screw
1	2 $\frac{1}{4}$	1x8

Our Nos. 1 $\frac{1}{2}$, 2 and 3 Eye Ends fit these Hinges.

BRACKET HINGES

With Jaws

No. 21

No. 22



Fig. 291



Fig. 292

Long Bolt
for Double
Hinge.



Fig. 293



Fig. 294



Fig. 295

These Bolts and Rivets also fit all the Bracket Hinges illustrated on the following page.

Galvanized	Nos. 21	22
Black	Nos. 021	022
Length of Arm	1	2 Inches
Length of Plate	4	5 Inches

These Hinges are concave on the bottom and fit a flat or round surface.

Nos. 1, 2, 3, 4 and 5 Eye Ends fit these Hinges.

HOW THEY WORK

These Hinges can be used as a Single Hinge or as a Double Arm Hinge. We furnish them with $\frac{3}{8}$ Rivets or $\frac{3}{8}$ Bolts, but we always send them with Rivets unless orders specify with Bolts.

As a Single Hinge

As a Double Hinge



Fig. 296



Fig. 297

BRACKET HINGES

Nos. 1, 2, 3, 4, and 5 Eye Ends
Fit These Hinges



Fig. 281

Galv'd No.	Black No.	Length of Arm, inches	Length of Plate, inches
23	023	3	3
24	024	4	3 $\frac{1}{2}$
25	025	5	4
26	026	6	4 $\frac{1}{2}$
27	027	8	4 $\frac{1}{2}$
28	028	10	6
29	029	12	6

Fitted with $\frac{3}{8}$ inch diameter Cotter Rivets.
Square Head Bolts furnished instead, if desired.

AWNING HARDWARE

JAW SLIDES With Machine Screw



Fig. 381

Galvanized No.	To Fit Dia. Round Iron, inches
30	$\frac{3}{8}$
31	$\frac{1}{2}$
32	$\frac{5}{8}$

Nos. 10, B, 11, 12 and 13 Eye Ends fit these Slides.

JAW SLIDES With Stove Bolt



Fig. 381A

Galvanized No.	To Fit Dia. Round Iron, inches
40	$\frac{3}{8}$
41	$\frac{1}{2}$
42	$\frac{5}{8}$

Nos. 10, B, 11, 12 and 13 Eye Ends fit these Slides.

JAW SLIDES With $\frac{3}{8}$ Bolt or Cotter Rivet

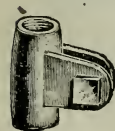


Fig. 382

These Slides all have wide Jaws to fit Nos. 2, 3 and 4 Eye Ends.

COTTER SLIDES Galvanized



Fig. 392

No.	To Fit Round Rod
11	$\frac{3}{8}$
21	$\frac{1}{2}$

This Slide takes our Nos. 0, A and 1 Eye Ends

NUT SLIDES Galvanized



Fig. 391

No.	To Fit Round Rod
10	$\frac{3}{8}$
12	$\frac{1}{2}$

SQUARE JAW SLIDES New Style

Fitted with $\frac{3}{8}$ Diameter Cotter Rivet
Always put this end up.



Fig. 383

Galvanized No.	Fits Square Iron of Full Size
43	$\frac{1}{2}$
44	$\frac{5}{8}$

Nos. 2, 3 and 4 Eye Ends fit these Slides.
Use Nos. 43 and 44 Square Sockets.

SQUARE SLIDES Diamond Shape, Galvanized

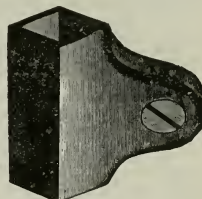


Fig. 373

No. 11— $\frac{5}{8}$ in. iron

JAW SLIDES

With thumb screw (to prevent rattling).

Size, $\frac{3}{8}$ in. per doz. \$...

Size, $\frac{1}{2}$ in. " ...

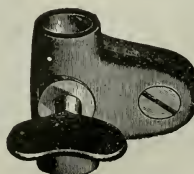


Fig. 393

ROLLER BEARING SLIDES

For $\frac{5}{8}$ in. Diameter Round Iron, with Machine Bolt.

Galvanized or Black



Fig. 401

"PACIFIC" ROLLER SLIDES

For $\frac{5}{8}$ and $\frac{3}{4}$ in. Iron
Galvanized or Black



Fig. 402

AWNING HARDWARE

DOUBLE ARM ENDS

Tapped to screw on to $\frac{5}{8}$ iron or $\frac{3}{4}$ pipe.
The Arms take Nos. 2, 3 and 4 eye ends.

With Nuts



Fig. 241

Galvanized No.	Black No.
2	02

With Cotter Pins



Fig. 242

Galvanized No.	Black No.
12	012

ROUND SOCKETS

Galvanized
For Ends of Slide Rods
Threaded



Fig. 361

No.	To Fit Diameter Iron	To Fit Size Pipe
0	$\frac{3}{8}$	..
1	$\frac{1}{2}$	$\frac{1}{4}$
2	$\frac{5}{8}$	$\frac{3}{8}$
3	$\frac{3}{4}$	$\frac{1}{2}$

Threaded



Fig. 362

No.	To Fit Diameter Iron	To Fit Size Pipe
20	$\frac{3}{8}$	..
21	$\frac{1}{2}$	$\frac{1}{4}$

Not Threaded

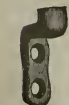


Fig. 363

No.	To Fit Diameter Iron	To Fit Size Pipe
10	$\frac{3}{8}$	..
11	$\frac{1}{2}$	..
12	$\frac{5}{8}$	..
13	$\frac{3}{4}$	$\frac{1}{2}$

ROUND SOCKETS

For Iron Columns
With Hole for $\frac{3}{8}$ Bolt
Threaded



Fig. 361A

Galv'd No.	To Fit Round Iron	To Fit Pipe
51	$\frac{1}{2}$	$\frac{1}{4}$
52	$\frac{5}{8}$	$\frac{3}{8}$

SQUARE SOCKETS
Diamond Shape, Galvanized

Fig. 372

No. 1— $\frac{1}{2}$ in. iron.No. 2— $\frac{5}{8}$ in. iron.

SQUARE SOCKETS

New Style

These Sockets allow the iron to stand
with the flat side towards the wall.



Fig. 364

Galvanized No.	Black No.	To Fit Diameter Square Iron	Per doz.
43	043	$\frac{1}{2}$	..
44	044	$\frac{5}{8}$	..

Use Nos. 43 and 44 Square Jaw Slides with
these Sockets.

COUPLINGS

Galvanized or Black



Fig. 351

Galv'd No.	Black No.	To Fit Size of	
		Round Iron	Pipe
1	01	$\frac{1}{2}$	$\frac{1}{4}$
2	02	$\frac{5}{8}$	$\frac{3}{8}$
3	03	$\frac{3}{4}$	$\frac{1}{2}$
4	04	1	$\frac{3}{4}$

ELBOWS

Galvanized or Black

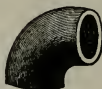


Fig. 352

Galv'd No.	Black No.	To Fit Size of	
		Round Iron	Pipe
1	01	$\frac{1}{2}$	$\frac{1}{4}$
2	02	$\frac{5}{8}$	$\frac{3}{8}$
3	03	$\frac{3}{4}$	$\frac{1}{2}$
4	04	1	$\frac{3}{4}$

SLIP TEES

Galvanized or Black



Fig. 353

Galv'd No.	Black No.	To Screw over Size Pipe at A	To Slip over Size Pipe at B
22	022	$\frac{3}{8}$	$\frac{3}{8}$
23	023	$\frac{3}{8}$	$\frac{1}{2}$
24	024	$\frac{3}{8}$	$\frac{3}{4}$
33	033	$\frac{1}{2}$	$\frac{1}{2}$
34	034	$\frac{1}{2}$	$\frac{3}{4}$
35	035	$\frac{1}{2}$	1
44	044	$\frac{3}{4}$	$\frac{3}{4}$
45	045	$\frac{3}{4}$	1
55	055	1	1

AWNING HARDWARE



Fig. 287

SPIKE AWNING HINGES

Galvanized Malleable Iron
2, 3, 4, 5, 6, 7, 8, 9, 10,
11, 12 in.

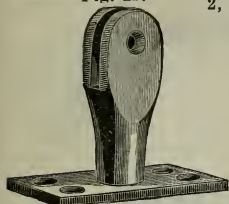


Fig. 277

PLATE AWNING HINGES

Galvanized

Fitted with $\frac{1}{4}$ in.
Diameter Stove
Bolts

Size in inches: 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
Take Nos. 10, 11, 12 and 13 Eye Ends.

BRACKET JAWS

Short Rivet Short Bolt Long Bolt
for for for
Single Single Double
Hinge Hinge Hinge



Fig. 301 Fig. 302 Fig. 303 Fig. 304
Bracket Jaws with short bolts sent unless
otherwise ordered.

Galvanized No.	Black No.	Screws on to	
		Round Iron	Pipe
1	01	$\frac{1}{2}$	$\frac{1}{4}$
2	02	$\frac{5}{8}$	$\frac{3}{8}$

Takes Nos. 1, 1 $\frac{1}{2}$, 2, 3, 4 and 5 Eye Ends

Front
Hinge

Method of Use

Side Hinge



Any length of
Bracket can be
made with these
fixtures with
Plates on oppo-
site page.

Fig. 305
As a Single Hinge

Fig. 306
As a Double Hinge



Fig. 307



Fig. 308

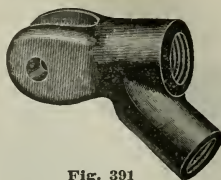


Fig. 391

JAW AND Y STUB

For $\frac{5}{8}$ by $\frac{1}{2}$ in. iron.

Black—Galv.

NUT ENDS

For Extension Rods
Shank 1 $\frac{5}{8}$ Inches Long

Regular



Fig. 251

Galvanized No.	Black No.	To Fit Size of	
		Round Iron	Pipe
1	01	$\frac{1}{2}$	$\frac{1}{4}$
2	02	$\frac{5}{8}$	$\frac{3}{8}$
3	03	..	$\frac{1}{2}$
4	04	..	$\frac{3}{4}$

Tapped with Pipe Thread

NUT ENDS

For Use with Wooden Front Rod
Shank 2 $\frac{3}{4}$ Inches Long

Special



Fig. 252

Galvanized No.	Black No.	To Fit Size of	
		Round Iron	Pipe
12	012	$\frac{5}{8}$	$\frac{3}{8}$
13	013	..	$\frac{1}{2}$
14	014	..	$\frac{3}{4}$

Shank 4 Inches Long

Galvanized No.	Black No.	To Fit Size of	
		Round Iron	Pipe
22	022	$\frac{5}{8}$	$\frac{3}{8}$
23	023	..	$\frac{1}{2}$
24	024	..	$\frac{3}{4}$

Tapped with pipe thread.

BOLT ENDS

For Extension Rods

Malleable Iron Sockets. Wrought Iron Bolts
With $\frac{1}{16}$ x 1 Bolts

Regular



Fig. 243

Galvanized No.	Black No.	To Fit Size of	
		Round Iron	Pipe
1	01	$\frac{1}{2}$	$\frac{1}{4}$
2	02	$\frac{5}{8}$	$\frac{3}{8}$
3	03	$\frac{3}{4}$	$\frac{1}{2}$
4	04	1	$\frac{3}{4}$

Tapped with pipe thread.

These fittings can be furnished with long bolts
for wooden front rods, if desired.

PLATES

All Plates are concave on the bottom to fit a flat or round surface.
All tapped with pipe thread.



Fig. 342

Galvanized No.	Black No.	Length inches	Screws on to	
			Iron	Pipe
31	031	3	$\frac{1}{2}$	$\frac{1}{4}$
1	01	$4\frac{1}{8}$	$\frac{5}{8}$	$\frac{3}{8}$



Fig. 343A

Galvanized No.	Black No.	Length inches	Screws on to	
			Iron	Pipe
21	021	$2\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{4}$
22	022	3	$\frac{5}{8}$	$\frac{3}{8}$



Fig. 347

Galvanized No.	Black No.	Length inches	Screws on to	
			Iron	Pipe
16	016	$3\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{4}$
6	06	4	$\frac{5}{8}$	$\frac{3}{8}$



Fig. 348

Galvanized No.	Black No.	Length inches	Screws on to	
			Iron	Pipe
7	07	3	$\frac{5}{8}$	$\frac{3}{8}$
8	08	4	$\frac{5}{8}$	$\frac{3}{8}$
9	09	$4\frac{1}{4}$	..	$\frac{1}{2}$
10	010	$3\frac{1}{2}$	..	$\frac{1}{2}$
11	011	4	..	$\frac{3}{4}$
12	012	4	..	1



Fig. 341

Galvanized No.	Black No.	Length inches	Screws on to	
			Iron	Pipe
0	00	2	$\frac{1}{2}$	$\frac{1}{4}$



Fig. 343

Galvanized No.	Black No.	Length inches	Screws on to	
			Iron	Pipe
2	02	$2\frac{1}{4}$	$\frac{5}{8}$	$\frac{3}{8}$



Fig. 344

Galvanized No.	Black No.	Length inches	Screws on to	
			Iron	Pipe
13	013	$3\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{4}$
3	03	$3\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{8}$



Fig. 345

Galvanized No.	Black No.	Length inches	Screws on to	
			Iron	Pipe
14	014	3	$\frac{1}{2}$	$\frac{1}{4}$
4	04	3	$\frac{5}{8}$	$\frac{3}{8}$



Fig. 346

Galvanized No.	Black No.	Length inches	Screws on to	
			Iron	Pipe
15	015	$2\frac{5}{8}$	$\frac{1}{2}$	$\frac{1}{4}$
5	05	3	$\frac{5}{8}$	$\frac{3}{8}$

CLAMP HINGES



Fig. 403

Fitted with $\frac{1}{4}$ inch Diameter Stove Bolt to hold Hinge to Pipe, and $\frac{3}{8}$ Diameter Cotter Rivet to take Eye Ends.

Use our Nos. 2, 3 and 4 Eye Ends in Jaws.

Galv'd No.	Black No.	To Clamp on Size of Pipe
2	02	$\frac{3}{8}$
3	03	$\frac{1}{2}$
4	04	$\frac{3}{4}$
5	05	1

PIPE CLAMPS



Fig. 404A

Fitted with $\frac{1}{4}$ inch Diameter Stove Bolt.
Use Nos. 11, 12, 13 and 14 Eye Ends.

Galv'd No.	Black No.	To Clamp on Size of Pipe
12	012	$\frac{3}{8}$
13	013	$\frac{1}{2}$
14	014	$\frac{3}{4}$
15	015	1

AWNING HARDWARE

GALVANIZED AWNING BLOCKS

Malleable Iron, Swivel Eyes

SINGLE SHEAVES



Fig. 201

No.	Length of Shell inches	Diam. of Rope inches	Per dozen
0	1	$\frac{1}{8}$	....
1	$1\frac{1}{2}$	$\frac{1}{4}$	....
3	$1\frac{3}{4}$	$\frac{5}{16}$	....
5	$2\frac{1}{4}$	$\frac{3}{8}$	....
7	$2\frac{1}{2}$	$\frac{1}{2}$	....

DOUBLE SHEAVES



Fig. 202

No.	Length of Shell inches	Diameter of Rope inches	Per dozen
00	1	$\frac{1}{8}$	....
2	$1\frac{1}{2}$	$\frac{1}{4}$	....
4	$1\frac{3}{4}$	$\frac{5}{16}$	....
6	$2\frac{1}{4}$	$\frac{3}{8}$	....
8	$2\frac{1}{2}$	$\frac{1}{2}$	....

AWNING SLIDE RODS

Galvanized Wrought Iron



Fig. 421

$\frac{3}{8}$ inch diameter.....per foot \$....
 $\frac{1}{2}$ inch diameter..... "

AWNING CLEATS

Galvanized Malleable Iron

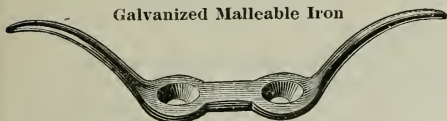


Fig. 441

Number	Length	Takes Screw	Galvanized per dozen
1	$4\frac{1}{2}$	$\frac{7}{8}$ x No. 10	....
2	6	$\frac{7}{8}$ x No. 12	....
3	8	1 x No. 12	....
4	10	$1\frac{1}{4}$ x No. 12	....

AWNING CHAIN

No. 32

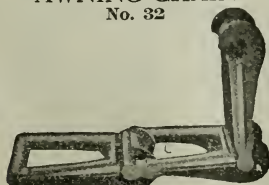


Fig. 452

Plainper foot \$....
 Galvanized "

PRESSED STEEL AWNING BLOCKS

Swivel Eye

SINGLE SHEAVES



Fig. 203

No.	Sheave Diameter inches	Diameter of Rope inches	Per dozen
0	$\frac{1}{2}$	$\frac{1}{8}$	....
1	$\frac{3}{4}$	$\frac{1}{4}$	....
3	1	$\frac{5}{16}$	....

DOUBLE SHEAVE

No.	Diameter Sheave inches	Diameter of Rope inches	Per dozen
2	$\frac{3}{4}$	$\frac{1}{4}$	....

Carpenter's Patent Combination Head Rod and Pulley Holder

For Window Awnings

PATENTED

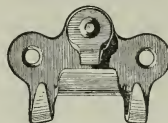


Fig. 431

This fixture is made with a retaining lug above and two hooks below, upon which the pulleys are hung. The retaining lug turns freely on the base of the fixture, forming a circular space large enough for the head rod. When the head rod is in place the hooks are closed so that the pulleys cannot come off until the head rod is removed.

HEAD ROD HOLDERS

Galvanized

No. 1, WITH 2 HOOKS FOR PULLEYS

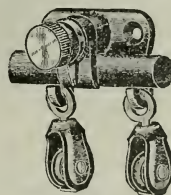


Fig. 432

For window awnings with $\frac{3}{8}$ -inch iron head rod.

The screws are made of brass so they can't rust in the holes, they are also upset on the end so they can't be taken out from the clamp and lost.

Nos. 2 AND 3 WITH 3 HOOKS FOR PULLEYS

No. 2. For double and triple windows, also small porch awnings using $\frac{3}{8}$ -inch iron head rods.

No. 3 is for large porch and store awnings using $\frac{1}{2}$ -inch iron head rods.

SCREW EYES

BRIGHT WIRE SCREW EYES
Prices per Gross

No. 6 No. 8 No. 10

Illustrations are full size

No.	Price	No.	Price	No.	Price	No.	Price
000	\$40.00	9	\$2.80	109	\$2.80	208	\$3.30
00	30.00	10	2.50	110	2.50	209	2.80
0	16.00	11	2.00	111	2.00	210	2.50
1	13.00	12	1.70	112	1.70	211	2.00
2	11.00	13	1.50	113	1.50	212	1.70
3	9.00	14	1.50	114	1.50	213	1.50
4	7.00	104	7.00	115	1.50	214	1.50
5	5.80	105	5.80	204	7.00	215	1.50
6	4.50	106	4.50	205	5.80	...	....
7	3.80	107	3.80	206	4.50	...	....
8	3.30	108	3.30	207	3.80	...	....

BRASS WIRE SCREW EYES

No.	Price	No.	Price	No.	Price	No.	Price
1000	\$70.00	1011	\$ 7.00	1111	\$ 7.00	1209	\$10.00
1001	57.50	1012	5.50	1112	5.50	1210	9.00
1002	48.00	1013	4.50	1113	4.50	1211	7.00
1003	37.00	1014	3.50	1114	3.50	1212	5.50
1004	30.00	1104	30.00	1114 ½	3.50	1213	4.50
1005	26.00	1105	26.00	1115	3.50	1214	3.50
1006	21.00	1106	21.00	1204	30.00	1214 ½	3.50
1007	16.00	1107	16.00	1205	26.00	1214 ¾	3.50
1008	13.00	1108	13.00	1206	21.00	1216 ½	3.50
1009	10.00	1109	10.00	1207	16.00	.....	.....
1010	9.00	1110	9.00	1208	13.00	.....	.....

SCREW HOOKS

BRASS WIRE SCREW HOOKS

BRIGHT WIRE SCREW HOOKS

No.	Price	No.	Price	No.	Price	No.	Price	No.	Price
1000	\$125.00	1006	\$30.00	1011	\$8.00	0	\$21.00	6	\$6.00
1001	105.00	1006 ½	26.00	1012	6.50	1	18.00	6 ½	5.30
1002	85.00	1007	21.00	1013	5.00	2	15.00	7	4.50
1003	65.00	1008	15.00	1014	4.00	3	12.50	8	4.00
1004	45.00	1009	12.00	....	....	4	10.00	9	3.50
1005	37.00	1010	10.00	....	....	5	8.00	10	3.00
							
							



Fig. 1000

THE AUTO-LOCK

Snap, Buckle, Clasp, or Hook and Eye. Is the Quickest to Fasten or Unfasten
Is Automatic and Perfect in Action

NICKEL

Sizes, inches	5/8	¾	7/8	1 1/8	1 1/2	1 ¾	2	2 1/2
Standard, per gross	\$1.00	\$1.10	....	\$1.60	\$1.80	\$2.30	\$2.40	\$2.70
Heavy, per gross	....	1.30	\$1.50	1.80	2.20	....	2.80	3.40

SLIDES

Sizes, inches	5/8	¾	7/8	1 1/8	1 1/2	1 ¾	2	2 1/2
Price, per gross	\$0.40	\$0.50	\$0.50	\$0.60	\$0.90	\$1.00	\$1.20	\$1.50



Fig. 371 Unlocked

AWNING HARDWARE



Fig. 6651
Bull's Eye or Lizard



Fig. 6652
Sailmakers' Thimble

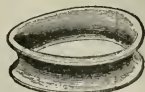


Fig. 6653
Egg Shaped Thimble



Fig. 6654
Wire Strapped
Lizard



Fig. 6654B
Iron Strapped
Lizard

BULL'S EYES OR LIZARDS

No. 6651. LIGNUM-VITAE—Unstrapped

Outside diameter, inches.....	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3½	4
Diameter of hole, inches.....	¾	½	⅝	¾	⅞	⅞	1	1⅛	1¼	1⅝	1½
Width of score, inches.....	¼	⅓	⅓	½	½	⅔	⅔	⅔	⅔	1	1⅛
Price per doz.....	\$0.60	\$0.60	\$0.70	\$0.70	\$0.80	\$0.90	\$1.00	\$1.20	\$1.50	\$2.00	\$2.80

SAILMAKERS' THIMBLES

No. 6652. GALVANIZED MALLEABLE IRON

Outside diameter, inches.....	⅝	¾	⅞	1	1⅛	1¼	1½	1¾	2	2¼	2½
Light, per doz.....	\$0.25	\$0.25	\$0.30	\$0.35	\$0.38	\$0.40	\$0.45	\$0.55	\$0.60	\$0.70	\$0.80
Heavy, per doz.....									.70	.85	1.25

Outside diameter, inches.....	2¾	3	3¼	3½	3¾	4	4¼	4½	4¾	5	.....
Light, per doz.....	\$0.95	\$1.10	\$1.35	\$1.70	.....	.....	.....	.....	.....	.....	.....
Heavy, per doz.....	1.60	1.70	1.90	2.15	\$2.80	\$3.25	\$3.60	\$4.30	\$5.40	\$6.30	.....

SAILMAKERS' BRASS THIMBLES

No. 6652. SPUN—Measure Extreme Diameter Outside, from Edge to Edge

Size, inches.....	⅝	¾	⅞	1	1⅛	1¼
Per doz.....	\$0.60	\$0.65	\$0.68	\$0.70	\$0.75	\$0.80

Size, inches.....	1¾	1½	1¼	2	2¼	2½
Per doz.....	\$0.95	\$1.00	\$1.25	\$1.50	\$2.25	\$2.75

EGG SHAPED THIMBLES

No. 6653. GALVANIZED MALLEABLE IRON
Measure Extreme Length of Thimble on the Outside

Size, inches.....	1¼	1⅝	1½	1⅞	1¾	2	2¼	2½	2¾	3	3¼	3½
Per doz.....	\$0.45	\$0.50	\$0.50	\$0.55	\$0.60	\$0.70	\$0.80	\$0.90	\$1.25	\$1.75	\$2.00	\$2.75

STRAPPED LIZARDS

No. 6654.	1	inch wire strapped.....	per doz.	\$0.50
No. 6654.	1½	inch wire strapped.....	"	.60
No. 6654B.	1½	inch iron strapped.....	"	.75



Fig. 6655

GLASS RINGS

Small	per 100	\$3.00
Medium	"	3.40
Large	"	3.80

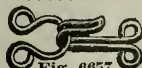


Fig. 6657
No. 13 Wire. Length Over All, 2 inches
Brass

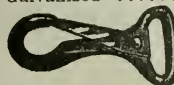


Fig. 6658—Oval Eye

HARNESS SNAPS

No.	Diameter Eye Inside, inches	Tinned per gross
1	1½	\$1.80
2	¾	2.40
3	1	2.40

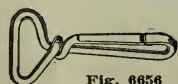


Fig. 6656

"F. G. L." WIRE SNAP HOOKS

Patented

¾ inch eye.....per gross \$1.50

HAND FIDS



Fig. 1710

No.	1	2	3	4	5
Length, inches....	14	16	18½	20½	22
Price, each.....	\$0.50	.60	.75	1.00	1.25

STANDING FIDS



Fig. 1711

No.	1	2	3	4
Length, inches....	30	32	36	40
Diameter, Butt, inches.	4	5	6	6½
Price, each.....	\$2.00	2.50	3.00	3.50

TRAWL SPLICERS

Ball Head, Polished Steel



Fig. 1712

Size, Number	Length, Inches	Per Dozen
1	4	\$2.25
2	4½	2.50
3	7	3.00
4	7	3.50

No. 4 is extra steel and flat pointed for sailmakers' use.

Wood Handle



Fig. 1713

Size, Number	Entire Length, Inches	Per Dozen
1	4	\$2.25
2	4½	2.50

SAILORS' PALMS

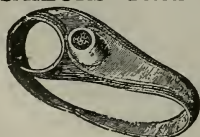


Fig. 1714

No. 1. Half Hide Mounted, Seaming..	per doz.	\$1.50
No. 2. Full Hide Mounted, Seaming..	"	2.00
No. 3. Brass Mounted, Seaming.....	"	2.00
No. 4. Hide and Brass Mounted, Seaming	"	2.25
No. 5. Hide Mounted, Seaming, Buckle	"	2.50

Nos. 1 and 2 for left hand also.

Sailmakers' Palms

Best Seaming	each	\$1.50
Best Roping	"	1.75

SAILMAKERS' PRICKERS

Best Tool Steel, Wood Handles



Fig. 1715

No. 1.	10 inches long.....	each	\$0.75
No. 2.	10½ inches long.....	"	.90
No. 3.	8 inches long.....	"	.50

SAILMAKERS' STEEL BENCH HOOKS

With Brass Swivel



Fig. 1716

Per dozen	\$1.50
-----------------	--------

SAILMAKERS' MARLINE SPIKES

Best Tool Steel, Wood Handles



Fig. 1717

No. 1.	13 inches long.....	each	\$2.00
No. 2.	14½ inches long.....	"	2.25

SAILMAKERS' HEAVERS

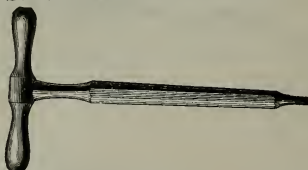


Fig. 1718

No. 1.	6¾ in. long, Common	each	\$1.00
No. 2.	6¾ in. long, Wrought Iron, Case Hardened	"	1.75
No. 3.	6¾ in. long, Best Tool Steel, well finished	"	2.50

SHEATHS AND BELTS

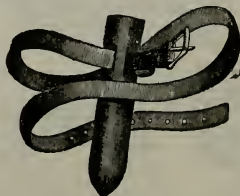


Fig. 1719

No. 1.	Common, ¾ inch wide....	dozen	\$2.75
No. 2.	Medium, ⅞ inch wide....	"	3.50
No. 3.	Extra, 1 inch wide.....	"	4.25

Belts Only

No. 1.	¾ inch wide.....	dozen	\$1.85
No. 2.	⅞ inch wide.....	"	2.25
No. 3.	1 inch wide.....	"	3.10

MURPHY CURTAIN FASTENERS

Polished Cast Brass and Nickel Plated



Single Flat Base

Complete with eyelet for ordinary goods or with eyelet for heavy goods will be furnished instead, if called for.

Pol. Brass	Stock Nos.	Nickel Plated
M 3401 E		M 3601 E

Dimensions of Base, inch



Single Screw

Complete with one eyelet for ordinary goods or for heavy goods if specified.

Pol. Brass.	Stock Nos.	Nickel Plated.	Dimensions of Base, inch.
M 3501 E		M 3603 E	$\frac{9}{16} \times \frac{5}{16}$



Eyelet for Ordinary Goods

These eyelets are made to be used with the curtain fasteners illustrated above.

Pol. Brass.	Stock Nos.	Nickel Plated.
M 3301 E		M 3605 E

EYELET PUNCH



This punch is made to cut all the holes necessary in the goods for inserting the eyelets at one blow. The punch itself is of brass with tool steel and cutters for inserting.

Stock No.—**M 3608 E**



Double Flat Base

Complete with two eyelets for ordinary goods or for heavy goods if specified.

Pol. Brass.	Stock Nos.	Nickel Plated.	Dimensions of Base, inch.
M 3402 E		M 3602 E	$\frac{7}{8} \times 1\frac{1}{4}$

Double Screw

Complete with two eyelets for ordinary goods or for heavy goods if specified.

Pol. Brass.	Stock Nos.	Nickel Plated.	Dimensions of Base, inch.
M 3502 E		M 3604 E	$\frac{9}{16} \times \frac{5}{8}$



Eyelet for Heavy Goods

These eyelets are made to be used in connection with any of the above curtain fasteners. The prongs on the eyelets being longer than on eyelet No. M 3301 E, make them suitable for heavy material.

Pol. Brass.	Stock Nos.	Nickel Plated.
M 3302 E		M 3606 E



Rivets



Burr

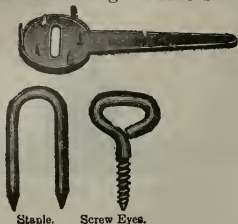
Rivets and Burrs

These rivets and burrs are made to be used in connection with either single or double Flat Base Fasteners, where they are used to attach to canvas or leather.

Stock No.	Description.	Stock No.	Description.
M 3609 E	Rivets	M 3610 E	Burrs

WAGON CURTAIN PATCHES

CRANDALL'S
With Six Prong Fasteners



Staple. Screw Eyes.
Fig. 6611A Fig. 6611B

		With Staples	With Screw Eyes
1.	$1\frac{1}{8}$ in. inside dia., per gro.	\$3.50	\$3.50
2.	1 in. inside dia., per gro.	5.50	5.50
Packed $\frac{1}{2}$ gross in a box			

KNOB EYELETS

Six Prongs

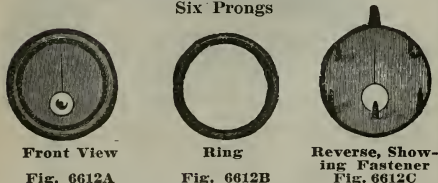


Fig. 6612A

Fig. 6612B

Fig. 6612C

Knob eyelets consist of a black japanned metal fastener with leather center and with outside prongs to pass through the curtain, and inside prongs to hold the leather center, and a black japanned ring on which the outside and inside prongs are clinched.

No. 1.	Best harness leather, for leather curtains	per gross	\$0.72
No. 2.	Best goat leather, for rubber curtains, pebbled leather.....	per gross	.64

SAIL NEEDLES

James Smith & Sons



Fig. 171
Long Square

No.	Length inches	Per 100	No.	Length inches	Per 100
17	$2\frac{1}{4}$	\$1.50	13	$3\frac{1}{8}$	\$2.75
17 $\frac{1}{2}$	$2\frac{3}{8}$	1.50	12	$3\frac{3}{8}$	3.60
16	$2\frac{1}{2}$	1.50	11	$3\frac{5}{8}$	5.50
16 $\frac{1}{2}$	$2\frac{5}{8}$	1.50	10	4	6.50
15	$2\frac{1}{2}$	1.50	9	$4\frac{1}{4}$	7.50
15 $\frac{1}{2}$	$2\frac{3}{4}$	1.50	8	$4\frac{1}{2}$	8.50
14	$2\frac{1}{8}$	1.65	7	...	9.75
14 $\frac{1}{2}$	3	1.75	6	...	11.00

25 in a Package

REDUCED EDGE SAIL NEEDLES

No. 17	16	$16\frac{1}{2}$	15	$15\frac{1}{2}$	per hd.	\$1.70
No. 14	$14\frac{1}{2}$	.....	.....	.....	"	1.85
No. 13	.....	.....	.....	.....	"	2.58

DRIVE KNOBS

JAPANNED

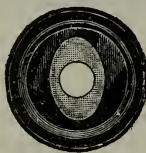


No. 82. No. 80. No. 81. No. 2. No. 99.

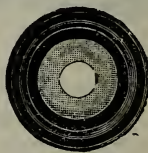
No. 82.	$\frac{7}{8}$ inch nail shank.....	per gro.	\$0.44
No. 80.	$\frac{7}{8}$ inch barbed shank....	"	.50
No. 81.	$\frac{5}{8}$ or $\frac{7}{8}$ inch shank....	"	.44
No. 2.	Double curtain	"	.48
No. 99.	Heavy coach	"	.90

TALCOTT'S ELASTIC BUTTON-HOLES

For Carriage and Street Car Curtains



Oval Hole
Fig. 6614A



Round Hole
Fig. 6614B

Inside ring and rubber eyelet. The rubber used in these buttonholes is pure gum.

Japanned.....per gross \$3.50

Packed in boxes containing one gross complete.

SPRING EYE SACKING NEEDLES



Fig. 172A

Length, inches	3	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6
Price, per doz.	\$1.00	1.15	1.20	1.25	1.40	1.50

PACKING OR SACK NEEDLES



Fig. 172

No.	Length inches	Per 100	No.	Length inches	Per 100
14	3	\$1.00	9	$5\frac{1}{2}$	\$2.75
13	$3\frac{1}{2}$	1.10	8	6	3.50
12	4	1.30	7	$6\frac{1}{2}$	4.50
11	$4\frac{1}{2}$	1.65	6	7	5.50
10	5	2.00	5	8	6.00

3 dozen in a Package

TENT POLE BANDS

Galvanized Wrought Iron



Fig. 6751

Diameter inches	Per dozen
1 1/4, 1 1/2, 1 3/4	\$1.25
2, 2 1/4, 2 1/2	1.50
3	1.75

RIDGE POLE BANDS

Galvanized Wrought Iron



Fig. 6752

Diameter inches	Per dozen
Sizes 1 1/2, 1 3/4	\$1.75
Sizes 2, 2 1/4, 2 1/2	2.00

FERRULES

Galvanized or Tinned Malleable Iron



Fig. 6753

Inches Size	Per dozen
1/4	\$0.20
3/8	.30
1/2	.45
5/8	.60
3/4	.80
7/8	1.00
1	1.25
1 1/8	1.75
1 1/4	2.25
1 3/8	2.50
1 1/2	2.75
1 3/4	3.75
2	5.00
2 1/4	7.00

GOVERNMENT TENT SLIDES



Fig. 6753

Size	Length	Diameter of Hole inch	Galv. Mall. Iron per dozen	Brass per dozen
1	5	1/2	\$0.75	\$1.50
2	4	1/4	.50	1.00
3	3	3/8	.30	.60

TENT POLES OCTAGON UPRIGHTS



Fig. 6758

6 to 9 feet	per foot \$
10 to 12 feet	"
14 to 16 feet	"

RIDGE POLES

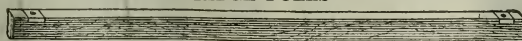


Fig. 6759

7, 9 and 12 feet	per foot \$
14 and 16 feet	"
18 and 20 feet	"
24, 30 and 35 feet, Spliced	"

WOOD TENT PINS



Fig. 6754

12 inch	per M \$
14 "	"
16 "	"
18 "	"
20 "	"

WOOD ROUND TENT STAKES

With Iron Ferrules



Fig. 6755

24 inch	per 100 \$
30 "	"
36 "	"
42 "	"
46 "	"

MALLEABLE IRON TENT PINS

8 1/2 inches long	per doz. \$0.60
13 inches long	" .80

WOOD TENT SLIDES OR KEYS



Fig. 6756

5/16 inch Hole	per M \$
3/8 "	"
1/2 "	"

WOOD TENT BUTTONS



Fig. 6751

Small, for 1/4 inch Rope	per M \$
Large, for 1/2 inch Rope	"

UNIVERSAL OR KNUCKLE JOINT WITH SQUARE KNUCKLES



Fig. 371

No. 1. Fits $\frac{5}{8}$ in. round iron..	Each Black	Galv.
No. 2. Fits $\frac{3}{4}$ in. round iron..	.....	.....



Fig. 442

WOOD HOOKS

Length Inches	Needle Points		Hand Made
	Galv'd. No.	Black No.	Black No.
1 $\frac{1}{4}$	1	01	11
1 $\frac{1}{2}$	2	02	12
2	3	03	13

Packed 1 Gross in Package

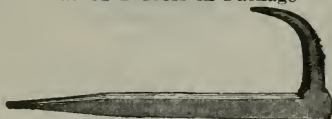


Fig. 443

BRICK HOOKS

Length Inches	Square with Flat Points No.	Round with Flat Points No.
2 $\frac{1}{2}$	21	31
3	22	32
4	23	33
5	24	34
6	25	35

MACHINE THREAD

Carried in Stock on Spools Only
Price per doz.

No.	600 Yards		6000 Yards		7200 Yards	
	Un-bleich'd	Black or Col'rs	Un-bleich'd	Black or Col'rs	Un-bleich'd	Black or Col'rs
12 to 20.3 Cord	\$...	\$...	\$...	\$...	\$...	\$...
30.3 Cord
36.3 Cord
12 to 20.4 Cord
30.4 Cord
36.4 Cord
12 to 20.6 Cord
30.6 Cord
36.6 Cord

AWNING BRAID

Worsted and Cotton

We carry only the best braid. We will take back any braid found defective, but cannot be responsible for anything further.

Scarlet
White
Blue

Green

Brown
Khaki
Tan

All Cotton Braid $\frac{1}{4}$ Gross Hanks or
3 Gross Spools.

COTTON BULLION FRINGE

For Awnings

We have in stock 2 $\frac{1}{2}$, 3, 4 and 5 inch Cotton Bullion Fringe. Colors:

Unbleached
Bleached
Red
Blue

Tan
Khaki
Brown
Green

Can also furnish Tassels to match.

WESTERN ELECTRIC MOTORS

For Sewing Machines.

Direct Current Type D. S. D.

Alternating Current Single Phase Type D. S. S.

Also larger motors for all purposes.

Prices on application.

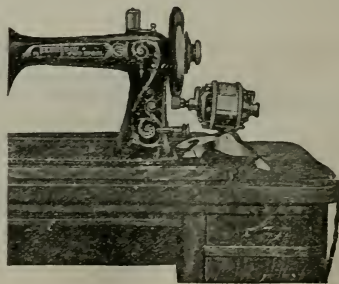


Fig. 641

COLUMBIA GALVANIZED IRON AWNING ROLLERS

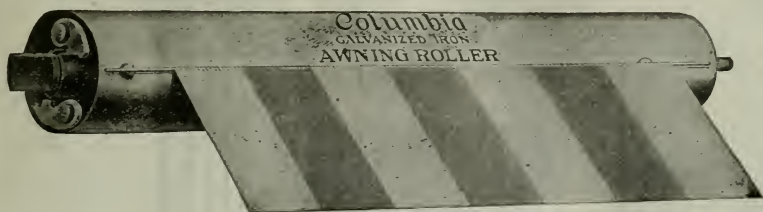


Fig. 377A

Are constructed for heavy work. They are exceedingly well made and contain an unusually powerful spring and heavy mechanism.

The Columbia method of attaching awning to roller is simple and sure, and gives absolute satisfaction.

A wire runs the entire length of the barrel and is soldered to the roller in several places. To the unattached portions of this wire the awning can be quickly sewed. This fastening is secure against hard usage.

An awning attached in this manner is more neatly finished than in any other way.

PRICE LIST

1 3/4 in. diameter, 4 ft. long and under.....	each	\$....
1 3/4 in. diameter, over 4 ft.—up to and including 5 ft.....	"	....
1 3/4 in. diameter, over 5 ft.—up to and including 6 ft.....	"	....
2 in. diameter, 6 ft. and under.....	"	....
2 in. diameter, over 6 ft.—up to and including 10 ft.....	per ft.	....
3 in. diameter, 6 ft. long and under.....	each	....
3 in. diameter, over 6 ft. to 10 ft.....	per ft.	....
3 in. diameter, over 10 ft. to 20 ft. inclusive.....	"	....
4 in. diameter, over 6 ft. to 10 ft.....	"	....
4 in. diameter, over 10 ft. to 20 ft. inclusive.....	"	....
4 in. diameter, over 20 ft. to 25 ft. inclusive.....	"	....

Brackets extra as follows: 2 in. \$0.20 per pair; 3 in. \$0.50 per pair; 4 in. \$0.70 per pair

ANTON'S LATERAL ARMS

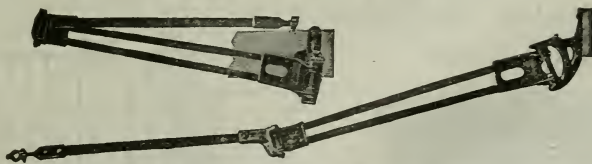


Fig. 377B. Designed for Open Transom Bar Construction

PRICE LIST

10 ft.	A.-L. Arms.....	\$9.75
9 ft.	A.-L. Arms.....	9.25
8 ft.	A.-L. Arms.....	8.25
7 ft.	A.-L. Arms.....	7.50
6 ft. 6 in.	A.-L. Arms.....	7.20
6 ft.	A.-L. Arms.....	7.00
5 ft. 6 in.	A.-L. Arms.....	6.25
5 ft.	A.-L. Arms.....	5.95
4 ft. 6 in.	A.-L. Arms.....	5.65
4 ft.	A.-L. Arms.....	5.30
3 ft. 6 in.	A.-L. Arms.....	5.00

This cut is an enlarged view of the hanger bracket of the No. 6 Anton's Lateral Arm.

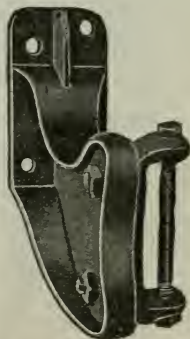


Fig. 377C

SEND FOR SPECIAL BOOKLET ON ANTON LATERAL ARMS

CURTAINS AND PORCH ENCLOSURES

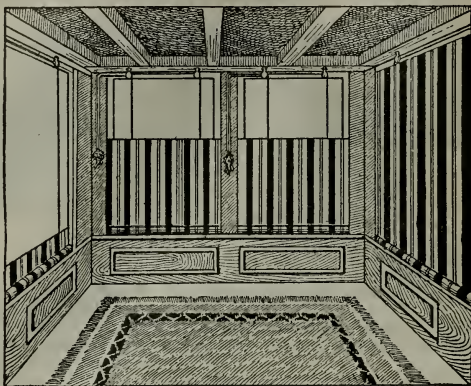


Fig. 9

SPRING ROLLER CURTAINS AND AWNINGS

For Sleeping Porches

The sleeping porch, while comparatively a new idea, has become almost a necessity. Open air sleeping has been recommended and adopted by many prominent medical authorities. The slogan today is not so much how to cure disease but how to prevent it. Sleeping out-of-doors is beneficial to the strong and healthy as well as to the invalid. A sleeping porch properly equipped has curtains mounted on G. B. C. galvanized spring rollers set at the bottom of the opening and raised by means of ropes and pulleys, as shown above. The curtains can be raised part way up, giving proper seclusion, and at the same time affording perfect ventilation. In time of storm, the curtains can be raised the entire way and the sides are equipped with fasteners which, when clasped, prevent the rain from beating in at the ends of the porch. The modern sleeping porch has its rugs, furniture, etc., that cannot be removed to the inside of the room in a moment's notice. Our sleeping porch arrangement, with the spring roller curtains on the inside, fastened at the bottom of the opening, operating upwards, or with the awning on the outside, makes the sleeping porch the acme of perfection and comfort.

SPRING ROLLER CURTAINS

For Sun Porch Shades

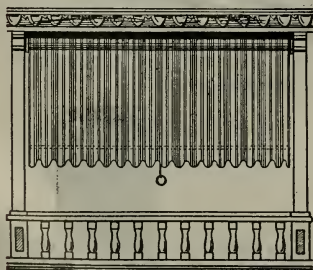


Fig. 10

These are mounted on Carpenter's specially constructed galvanized spring rollers. The spring roller is attached at the top of opening and is raised and lowered in the same manner as an ordinary window shade, as shown in Fig. 10. Fasteners are set at intervals down each side of curtain to hold the curtain in place in time of stormy weather.

Prices on Application

REGULAR ROLLER ROPE CURTAINS

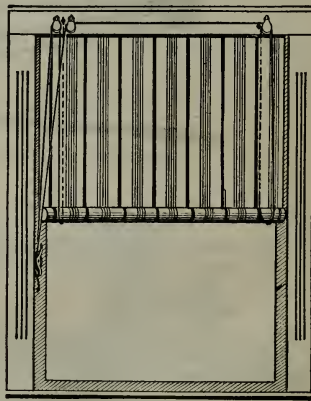


Fig. 11

Our regular rope curtains are not only a practical and serviceable means of enclosing porches for sleeping purposes, but sunshades as well. They can be raised by means of ropes and pulleys to any desired height as shown in cut. They are simple to install. For pulleys and rope arrangement, see Fig. 11. Prices on application.



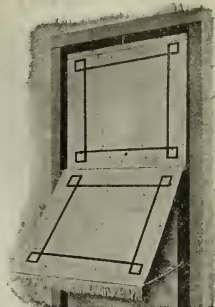
Cut shows position of "Spring Shade," when rolled up. The middle sash makes it practically invisible from the inside.

THE CARPENTER "Spring Shades"

Smith Patent—Patented August 24,
1909.

The Only Practical, Up-to-Date Roller
Window Awning for Residences,
Office Buildings, Factories, etc.

"It works from the inside."



Cut showing "Spring Shade" extended.

The "Spring Shade" is built on a simple yet unique principle. It consists merely of a one-piece canvas or stripe cover which rolls up from its center on a specially constructed spring roller. The roller is suspended from galvanized brackets at the center of the window. A pocket in the top of the upper canvas conceals a wood batten, to the center of which is attached the operating cord. The cord is led through a small jam pulley at the top of the window. When the cord is pulled the spring roller is released and permits the two parts of canvas to unroll from the roller, the upper part moving up flat against the upper sash, the lower part, which carries the hinged extension arms, falling downward and outward to any position desired, the jam pulley holding the cord whenever it is released.

The adjustable feature of the "Spring Shade" is of the utmost value in any office building or factory where light is an essential consideration, as it can be opened part way in the morning, and as the position of the sun's rays change during the day, the position of the awning can be altered to meet the varying conditions. The "Spring Shade" will also make a strong appeal to everyone who has struggled with the heretofore impossible combination of window screens and awnings. By making a small groove in the screen frame, the operating cord can be let down between the screen and the window sash, and the awning operated easily and quickly without the necessity of raising the screens. It is a very simple matter to carry this still further and lead the operating cord through a small hole at the top of the window sash directly into the room, thus making the operation of the "Spring Shade" the perfection of ease and convenience as compared to the awkward, and often difficult, operation of the old style awning.

Not the least surprising feature of the "Spring Shade" is the amount of sun protection it affords. It may seem to the casual observer that an awning without side wings, like the "Spring Shade," cannot give as much protection as the old style awning with side wings. This is a wrong impression, however, as in actual shade area the "Spring Shade" exceeds the old style awning with wings. When fully extended the "Spring Shade" drops to a much lower point than is practical in the old style awning, thus more than making up for the small amount of sunlight admitted during certain hours at the side. The sunlight admitted at the side consists only of oblique rays, lasting for only a short period each day. The sunlight that annoys is the direct glare coming straight through the window—against this direct glare, the Carpenter "Spring Shade" gives more protection than the old style awning.

The "Spring Shade" is so extremely simple in construction that after the original installation it can be taken down and rehung by any janitor or house man. In taking down, all that is necessary is to allow the cloth to roll up on the roller—pull the operating cord out of the pulley—lift the roller from its brackets and the extension arms from their hinges, and the work is done without the necessity of a single tool. The few simple fixtures which are used in connection with the "Spring Shade" are fastened permanently to the window and there is never any necessity for marring the window frame with new screw or nail holes. We guarantee the spring roller and all metal parts for two years.

There are no slide rods or slides to stick and jam. There are no braces to be released before awning can be operated, with the attendant nuisance of raising window and screen. There is nothing to rattle or jar loose.

Send for descriptive booklet.

For Prices See Next Page.

CARPENTER Spring Shade PRICE LIST

COMPLETE

WIDTH	For Windows 6 Feet High or Less			For Windows 7 Feet to 6 Feet High			For Windows 8 Feet to 7 Feet High			For Windows 9 Feet to 8 Feet High		
	Standard Stripe, Blue or Brown, each	Yale, Van Dyke, Princeton, Illinois, Chicago, Triplex & Standard Duplex, Tan & Green, each	Other Stripes, each	Standard Stripe, Blue or Brown, each	Yale, Van Dyke, Princeton, Illinois, Chicago, Triplex & Standard Duplex, Tan & Green, each	Other Stripes, each	Standard Stripe, Blue or Brown, each	Yale, Van Dyke, Princeton, Illinois, Chicago, Triplex & Standard Duplex, Tan & Green, each	Other Stripes, each	Standard Stripe, Blue or Brown, each	Yale, Van Dyke, Princeton, Illinois, Chicago, Triplex & Standard Duplex, Tan & Green, each	Other Stripes, each
2' 6" or less....	\$5.32	\$5.62	\$5.80	\$5.40	\$5.72	\$5.90	\$5.74	\$6.12	\$6.30	\$5.88	\$6.12	\$6.30
3' 0" to 2' 6"...	5.82	6.24	6.48	6.10	6.24	6.46	6.40	6.64	6.80	6.28	6.64	6.90
3' 6" to 3' 0"...	6.10	6.58	6.84	6.44	6.58	6.82	6.74	7.22	7.50	6.80	7.22	7.46
4' 0" to 3' 6"...	6.40	6.74	7.02	6.76	7.14	7.28	7.10	7.62	7.80	7.18	7.62	7.90
4' 6" to 4' 0"...	6.78	7.18	7.28	7.24	7.78	8.00	7.58	8.22	8.40	7.66	8.20	8.50
5' 0" to 4' 6"...	7.12	7.78	8.12	7.62	7.90	8.40	8.24	8.94	9.20	8.32	8.94	9.28
5' 6" to 5' 0"...	7.52	8.06	8.42	8.18	8.46	8.60	8.76	9.52	9.90	8.84	9.52	9.88
6' 0" to 5' 6"...	8.16	8.70	8.84	8.78	9.10	9.00	9.18	9.90	10.30	9.70	9.90	10.30
7' 0" to 6' 0"...	9.52	10.00	10.42	10.40	11.00	11.40	11.40	12.94	13.40	8.80	13.14	13.40
8' 0" to 7' 0"...	10.46	11.10	11.58	11.40	11.30	11.50	12.38	14.24	14.80	13.36	14.24	14.70
9' 0" to 8' 0"...	12.18	12.88	13.42	13.00	13.40	13.76	14.26	16.44	16.90	16.28	17.50	18.10
10' 0" to 9' 0"...	14.60	15.40	16.00	16.00	17.00	17.60	17.42	19.56	20.36	18.64	21.26	21.92
11' 0" to 10' 0"...	16.74	17.52	18.48	17.26	17.50	18.20	18.96	21.36	22.00	20.28	22.94	23.30
12' 0" to 11' 0"...	18.64	19.64	20.36	18.84	18.64	20.24	20.22	22.86	23.70	21.70	24.86	25.40

WIDTH	For Windows 10 Feet to 9 Feet High			For Windows 11 Feet to 10 Feet High			For Windows 12 Feet to 11 Feet High		
	Standard Stripe, Blue or Brown, each	Yale, Van Dyke, Princeton, Illinois, Chicago, Triplex & Standard Duplex, Tan & Green, each	Other Stripes, each	Standard Stripe, Blue or Brown, each	Yale, Van Dyke, Princeton, Illinois, Chicago, Triplex & Standard Duplex, Tan & Green, each	Other Stripes, each	Standard Stripe, Blue or Brown, each	Yale, Van Dyke, Princeton, Illinois, Chicago, Triplex & Standard Duplex, Tan & Green, each	Other Stripes, each
2' 6" or less....	\$6.36	\$6.62	\$6.80	\$6.58	\$7.00	\$7.20	\$6.94	\$6.98	\$7.20
3' 0" to 2' 6"...	6.68	7.04	7.30	7.02	7.50	7.80	7.20	7.60	8.00
3' 6" to 3' 0"...	7.04	7.48	7.80	7.38	7.80	8.10	7.64	8.20	8.60
4' 0" to 3' 6"...	7.46	7.94	8.10	8.10	8.60	8.90	8.28	8.84	9.30
4' 6" to 4' 0"...	8.06	8.64	9.00	8.52	9.10	9.50	8.70	9.40	10.10
5' 0" to 4' 6"...	8.92	9.56	9.90	9.34	9.78	10.40	9.38	10.00	10.50
5' 6" to 5' 0"...	9.76	10.96	11.50	10.18	11.10	11.70	10.40	11.10	11.60
6' 0" to 5' 6"...	10.36	11.20	11.80	11.30	12.00	12.60	11.24	12.08	12.80
7' 0" to 6' 0"...	13.28	14.16	14.60	14.20	15.10	15.70	14.70	15.86	15.90
8' 0" to 7' 0"...	14.40	15.40	16.00	15.34	16.40	17.00	16.80	18.10	20.60
9' 0" to 8' 0"...	16.40	17.52	18.20	21.50	22.60	22.14	18.64	20.00	20.80
10' 0" to 9' 0"...	20.66	21.46	22.30	23.14	24.10	24.90	23.56	24.20	25.20
11' 0" to 10' 0"...	21.70	22.94	23.68	24.00	24.90	25.80	25.60	26.20	27.00
12' 0" to 11' 0"...	23.54	24.86	25.00	25.20	26.60	27.40	27.90	28.90	29.70

For any size lying between the above divisions take the list of the next higher size.

A WORD REGARDING THE SIZES OF TENTS

Attention is called to the fact that our list prices on Tents are based on the actual yardage of cloth in each Tent, which of course is the only fair way to figure list price. When this list was decided on by the manufacturers interested, the sizes were in some instances incorrectly stated, evidently through an oversight.

The following sizes of Tents, either in width or length, will be found to be exactly as stated: 7, 9½, 14, 16, 30 and 35 feet.

The following sizes will differ from the list, for the reason that the goods will not cut profitably to the exact dimensions specified.

Tents listed as	9 feet	will measure	9½ ft.	Tents listed as	20 feet	will measure	19¾ ft.
" "	12 "	" "	11½ "	" "	24 "	" "	23 "
" "	18 "	" "	17½ "				

HINTS ON COTTON DUCK

Cotton Duck, such as is used in the manufacture of Tents, etc., can be divided into three general divisions, based on quality.

BEST. U. S. ARMY STANDARD DUCK

28½ inches wide, made in the following weights, per lineal yard: 8 oz., 10 oz., 12 oz., and 15 oz. Used for all government purposes, and the cleanest, closest, strongest and most durable Duck possible to construct.

GOOD. DOUBLE FILLING DUCK

29 inches wide, made in same weights as Army Duck, but not of such good cotton nor so finely woven. This Duck when made as ours is, is well suited for tents and covers where a first-class article at a moderate price is required. Excepting on government work we use more of this grade than any other.

FAIR. SINGLE FILLING DUCK

29 inches wide, made in 7 oz., 8 oz., 10 oz., 12 oz., per lineal yard. These goods are made of coarser yarns and of poorer cotton than the above grades. They are low priced, and make fairly satisfactory tents and covers where great durability to withstand hard usage is not the first essential. This is the grade on which many department stores quote such very attractive prices, claiming that they are "Standard Army Goods."



A View in One of Our Machine Rooms

Showing force at work on Tents, Awnings, etc. The Machines are of a special type made for our use and are run entirely by power; the operators are kept very busy, however, merely handling the cloth, as these machines have a speed of 2,500 stitches to the minute.

SPECIAL WALL TENTS



Fig. 515

KHAKI

Khaki is the name generally applied to duck, drill and canvas dyed an olive drab or tan color. It is very popular for its sun-glare and heat resistance, and makes an ideal covering for camping purposes.

It is specified by national governments for housing armies both in the field and permanent camps. For this service mineral dyed Khaki is used because it is water repellant.

TAN-TEXTOL

For an "All Summer Camp," where an absolutely waterproof and mildewproof tent is desired, we unhesitatingly recommend our Tan-Textol. This is a special processed fabric of tan color which will stand up under all weather conditions and not deteriorate as rapidly as most materials which are subjected to rain, dew or moisture of any kind, or exposed to the sun's rays.

WALL TENTS

Complete with Poles, Stakes, Guys and Keys

Size	Height of Center	Height of Wall	8 oz. Drill Khaki	10 oz. Army Khaki	10 oz. Army Tan-Textol
4 $\frac{3}{4}$ x 7	6	2 $\frac{1}{2}$	\$12.00	\$13.65	\$16.80
7 x 7	7	3	16.00	18.20	22.40
7 x 9	7	3	19.40	22.10	27.20
9 x 9	7 $\frac{1}{2}$	3	23.40	26.65	32.80
9 x 11 $\frac{1}{2}$	7 $\frac{1}{2}$	3	27.40	31.20	34.80
9 x 14	7 $\frac{1}{2}$	3	30.80	35.10	43.20
11 $\frac{1}{2}$ x 11 $\frac{1}{2}$	8	3 $\frac{1}{2}$	34.20	39.00	48.00
11 $\frac{1}{2}$ x 14	8	3 $\frac{1}{2}$	38.20	43.55	53.60
11 $\frac{1}{2}$ x 16	8	3 $\frac{1}{2}$	43.60	49.75	61.20
11 $\frac{1}{2}$ x 18	8	3 $\frac{1}{2}$	48.45	55.25	68.00
14 x 14	9	4	46.20	52.65	64.80
14 x 16	9	4	52.45	59.80	73.60
14 x 18	9	4	58.15	66.30	81.60
14 x 21	9	4	63.30	72.15	88.80
14 x 23	9	4	68.40	78.00	96.00
16 x 16	11	5	65.00	74.10	91.20
16 x 18	11	5	71.25	81.25	100.00
16 x 21	11	5	76.95	87.75	108.00
16 x 23	11	5	83.25	94.90	116.80
16 x 30	11	5	106.20	120.60	147.60
16 x 35	11	5	118.60	134.70	164.85
18 x 18	11	5	79.80	91.00	112.00
18 x 21	11	5	86.10	98.15	120.80
18 x 23	11	5	92.95	105.95	130.40
18 x 30	11	5	118.00	134.00	164.00
18 x 35	11	5	131.60	149.45	182.90

Note.—The above prices do not include flies. Regular flies for any size Tent will be furnished without poles at one-half the price of the Tent quoted on application. If higher walls than list specifies are wanted, add 5% to list of each additional 6 inches of wall so added.

WATERPROOF SILKELENE TENTS

In our Waterproof Silkelene Tents we offer the result of years of experimenting with light weight, waterproof fabrics for use in tents for camping purposes. There has been a growing demand for such a covering, and we believe we have the best material on the market to meet the conditions usually found on an outdoor trip.

It combines strength and light weight and is as waterproof a material as can be manufactured. We recommend it as the most desirable tent made.

These tents are all constructed and finished in the very best workmanship, all holes being hand worked, using galvanized steel rings in place of the brass grommets. The ridge is reinforced with a band, and rope is attached to this band by hand. All rope used throughout is of very best cotton. The stove-pipe holes are placed in rear wall unless ordered otherwise. All tents are made with sod cloths 9 inches wide and sewed to bottom of wall. If light weights are put on the sod cloths after tent is put up, they will prevent insects from crawling into the tent. We can furnish these tents with canvas floors. Windows, covered with bobbinet netting, can be placed in tents. One door in each tent. Additional doors can be furnished if desired. Protection against flies, mosquitoes, etc., can be secured by using bobbinet netting which can be sewed across the entire front when ordered.

We always send tents with rope ridge and pins. If poles are wanted, they should be specified. All tents are packed in waterproof bag.

WALL TENTS

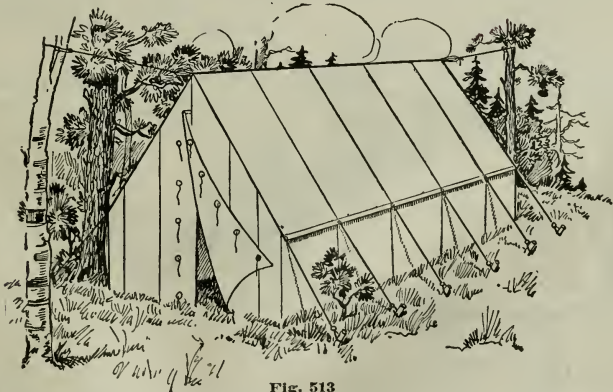
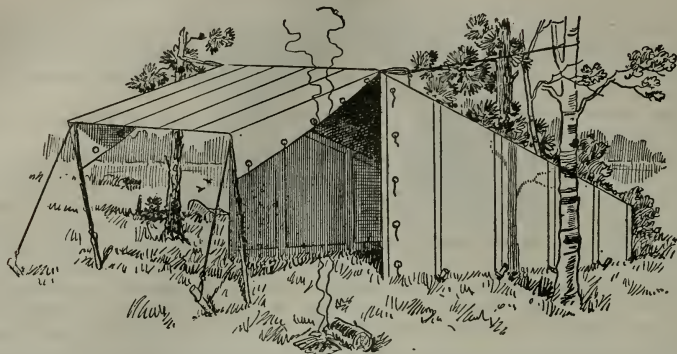


Fig. 513

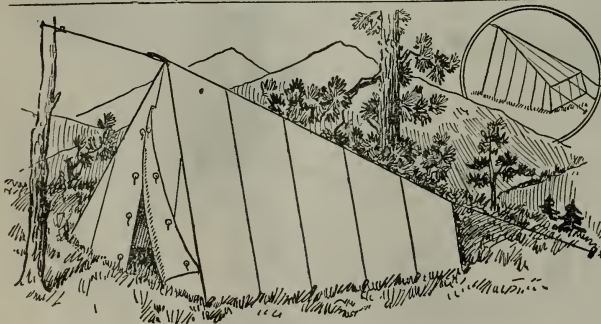
Size, Feet	Height in Feet		With Rope Ridge Each	Weight Lbs.	Extra for Bobbinet Netting Front	Extra for Spliced Poles, Pins
	Center	Wall				
4 1/2 x 7 1/2	6	1 1/2	\$27.50	8 1/4	\$ 4.00	\$2.75
6 x 7 1/2	6 1/2	2	32.50	9 3/4	5.25	3.00
7 1/2 x 7 1/2	7	2	40.00	10 1/4	7.25	3.00
7 1/2 x 9 1/2	7 1/2	3	50.00	12 3/4	7.50	3.50
9 1/2 x 9 1/2	7 1/2	3	57.50	15	9.50	3.50
9 1/2 x 11 1/2	7 1/2	3	63.00	17 1/2	9.50	4.50
10 x 12	8 1/2	3 1/2	78.50	21	12.00	5.00
12 x 14	9	3 1/2	92.50	25	12.50	5.50

Window covered with Bobbinet Netting and Silkelene Flap additional, \$3.50. Asbestos Stove Pipe Collar additional, \$3.00. Extra doors additional, \$2.50.

WATERPROOF SILKELENE TENTS AMAZON



Size feet	Height Feet		With Rope Ridge	Weight lbs.	Extra for Bobbinet Netting Front	Extra for Spliced Poles Pins
	Front	Back				
4 1/2 x 7 1/2	5	1 1/2	\$25.00	6 1/2	\$ 8.00	\$3.25
7 1/2 x 7 1/2	5	1 1/2	35.50	9 1/4	8.00	3.50
9 1/2 x 9 1/2	7 1/2	3	57.00	16	15.00	5.00
10 x 12	7 1/2	3	68.00	20	18.00	5.75



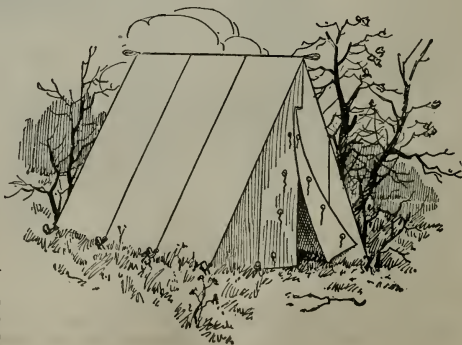
PROTEAN TENT

Size feet	Ht. Ft.		With Pole and Pins	Weight lbs.	Extra for Bobbinet Netting Front
	Center	Wall			
5 x 7 1/2	6	1 1/2	\$22.00	5 3/4	\$3.50
7 1/2 x 7 1/2	7	1 1/2	35.00	9 1/2	5.25
7 1/2 x 9 1/2	7 1/2	2	42.00	12	5.50
9 1/2 x 9 1/2	7 1/2	3	45.00	13	7.50
9 1/2 x 11 1/2	7 1/2	3	57.00	17 1/2	8.00

WEDGE OR A TENT

Size feet	Height Center feet	With Rope Ridge	Weight lbs.	Extra for Bobbinet Netting Front	Extra for Spliced Poles Pins
3 x 7 1/2	4	\$15.50	5	\$2.00	\$2.50
4 1/2 x 7 1/2	5	23.00	6 1/2	3.50	2.75
7 1/2 x 7 1/2	7	29.00	10	5.00	3.00
7 1/2 x 9 1/2	7	35.00	11 1/4	5.00	3.50
9 1/2 x 9 1/2	8	41.00	13 1/2	7.25	4.00
10 1/2 x 12	9	66.00	19	9.00	5.00

Windows covered with Bobbinet Netting
and Silkelene Flaps, additional.....\$3.50
Asbestos Stove Pipe Collar, additional... 3.00
Extra Doors, additional..... 2.50



TENTS

Regular Wall Tents Complete With Poles, Stakes, Guys, and Keys



Copyright 1899
Geo B Carpenter & Co

MACHINE SEWED

Prices do not include Flies. Flies for any size Tents will be furnished without poles at one-half the price of the Tent. If higher walls than list specifies are wanted, add 5 per cent to list for each additional 6 inches of wall so added.

Size	Height of Center	Height of Wall	8 oz. Duck Single Filling	10 oz. Duck Single Filling	10 oz. Duck Double and Twisted Filling, or 8 oz. Army	12 oz. Duck Double and Twisted Filling, 10 oz. Army	12 oz. Army Duck or No. 10	15 oz. Duck or No. 8
7 x 7	6½	3	\$10.65	\$12.75	\$13.45	\$16.00	\$18.20	\$22.40
7 x 9	6½	3	12.95	15.50	16.35	19.40	22.10	27.20
9-4x9	7½	3	15.60	18.65	19.70	23.40	26.65	32.80
9-4x11	8	3	18.25	21.85	23.05	27.40	31.20	38.40
9-4x14	7	3	20.55	24.60	25.95	30.80	35.10	43.20
11-8x11	8	3½	22.80	27.30	28.80	34.20	39.00	48.00
11-8x14	8	3½	25.50	30.50	32.20	38.20	43.55	53.60
11-8x16	8	3½	28.35	33.90	36.75	43.60	49.75	61.20
11-8x18	8	3½	31.20	37.35	40.80	48.45	55.25	68.00
14 x14	9	4	30.80	36.85	38.90	46.20	52.65	64.80
14 x16	9	4	34.20	40.95	44.20	52.45	59.80	73.60
14 x18	9	4	37.65	45.05	49.00	58.15	66.30	81.60
14 x21	9	4	41.05	49.15	53.30	63.30	72.15	88.80
14 x23	9	4	44.10	52.80	57.60	68.40	78.00	96.00
16-4x16	10½	5	42.20	50.50	54.75	65.00	74.10	91.20
16-4x18	10½	5	46.40	55.55	60.00	71.25	81.25	100.00
16-4x21	10½	5	50.00	59.85	64.80	76.95	87.75	108.00
16-4x23	10½	5	54.35	65.05	70.10	83.25	94.90	116.80
16-4x30	10½	5	72.00	85.50	90.00	106.20	120.60	147.60
16-4x35	10½	5	80.40	95.50	100.50	118.60	134.70	164.85
18-8x18	11	5	52.10	62.35	67.20	79.80	91.00	112.00
18-8x21	11	5	56.25	67.35	72.50	86.10	98.15	120.80
18-8x23	11	5	61.20	73.25	78.25	92.95	105.95	130.40
18-8x30	11	5	80.00	95.00	100.00	118.00	134.00	164.00
18-8x35	11	5	89.20	105.95	111.55	131.60	149.45	182.90

We recommend and always insert an Asbestos Stone Pipe Ring—which is noiseless, and can be rolled up without injury—in the rear end wall. Extra for same \$3.00.

All Tents are made with one door as illustrated. For an extra door, extra, \$1.50.

Sod Cloths 9 inches wide are attached to bottom of wall of Tents to keep out insects, at 6 cents per lineal foot.

If Rope Ridge is wanted—without poles—same will be furnished without an additional charge.

SEE INDEX FOR SILKOLINE WALL TENTS

LARGE WALL TENTS ROPED

Complete With Poles, Stakes and Guys

Extra hand roped and finished. Complete with center and wall poles, iron banded stakes and two tackle blocks for stretching the ridge.

These Tents are used mainly by contractors to house a large number of men, where a temporary shelter is necessary. Made in the best possible manner, strongly roped by hand on ridge, eaves, gables and across the roof.



MACHINE SEWED

Flies without poles will be furnished at one-half the prices for any given size Tent. If higher walls than list specifies are wanted, add 5 per cent to list for each foot or fractional part of a foot of wall so added.

Prices are for Tents made in best manner, properly roped on ridges, gables, and every 9 feet of top. Additional roping will be charged for at 7 cents per foot of roping.

Size	Height of Pole	Height of Wall	8 oz. Single Filling Duck	10 oz. Single Filling Duck	10 oz. Double Filling	12 oz. Double Filling	12 oz. Army	15 oz. Army or No. 8 Duck
18—8x18—8	12	6	\$ 91.80	\$103.30	\$108.65	\$121.65	\$133.15	\$163.75
18—8x21	12	6	99.00	111.40	117.15	131.20	143.55	176.55
18—8x23—4	12	6	106.20	119.50	125.70	140.75	154.00	189.40
18—8x28	12	6	120.60	135.70	142.75	159.80	174.90	215.10
18—8x30—4	12	6	127.80	143.80	151.25	169.35	185.35	227.95
18—8x35	12	6	142.20	160.00	168.30	188.45	206.20	253.60
21 x21	13	6	108.00	121.50	127.80	143.10	156.60	192.60
21 x23—4	13	6	116.40	130.95	137.75	154.25	168.80	207.60
21 x28	13	6	132.00	148.50	156.20	174.90	191.40	235.40
21 x35	13	6	156.00	175.50	184.60	206.70	226.20	278.20
21 x42	13	6	180.00	202.50	213.00	238.50	261.00	321.00
21 x49	13	6	204.00	229.50	241.40	270.30	295.80	363.80
23—4x28	14	6	151.20	170.10	178.95	200.35	219.25	269.65
23—4x35	14	6	178.80	201.15	211.60	236.95	259.30	318.90
23—4x42	14	6	206.40	232.20	244.25	273.50	299.30	368.10
23—4x49	14	6	234.00	263.25	276.90	310.05	339.30	417.30
23—4x56	14	6	261.60	294.30	309.60	346.65	379.35	466.55
23—4x63	14	6	289.20	325.35	342.25	383.20	419.35	516.75

Roped on Ridge, Eaves, Gables and every third cloth or 7 feet on roof.

If higher walls than above list specifies are wanted, add 5% to list for each foot.

Hand roping on flies, add 7c per lineal foot net.

Additional hand roping on tent at 7c per lineal foot net.

Sod Cloth 14 inches wide sewed around bottom wall, 3c per lineal foot net.

AMAZON TENTS

Complete with Poles and Stakes

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Geo. B. Carpenter & Co.

MACHINE SEWED

Size	Height of Pole	Height of Wall	8 oz. Single Filling Duck	10 oz. Single Filling Duck	10 oz. Double Filling	12 oz. Double Filling or 10 oz. Army Duck
7x 7.....	8	3	\$15.58	\$18.66	\$20.20	\$23.58
7x 9.....	8	3	19.38	23.21	25.12	29.32
7x12.....	8	3	23.18	27.76	30.04	35.08
9x 9.....	9	3	23.18	27.76	30.04	35.08
9x12.....	9	3	27.36	32.76	35.46	41.40
9x14.....	9	3	31.54	37.76	40.88	47.73
9x16.....	9	3	35.72	42.77	46.80	54.05

"A" OR WEDGE TENTS

Complete with Poles, Stakes, etc., or with "Rope Ridge" (as per cut)

These Tents make a good addition to a boating or fishing outfit, and without poles (furnished with rope ridge, if desired, as in cut) can be packed in a very small space. They are also used by hunters, prospectors and others who wish to reduce the load carried to a minimum.



Size	Height of Pole	8 oz. Single Filling Duck	10 oz. Single Filling Duck	12 oz. Duck Double and Twisted Filling
5 x 7.....	6	\$ 6.66	\$ 8.05	\$10.26
7 x 7.....	7	8.82	10.66	13.60
7 x 9.....	7	10.80	13.05	16.65
9 x 9.....	7	12.24	14.79	18.87
9 ½ x12.....	7	14.22	17.18	21.92
12 x12.....	8	17.28	20.88	26.64
12 x14.....	8	20.16	24.36	31.08

MACHINE SEWED

If 9-inch sod cloth is wanted, around bottom of tent, add 2c per lineal foot net.

GEO. B. CARPENTER & CO.

MINERS' TENTS

Complete with Pole, Stakes, etc.



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Without Wall

MACHINE SEWED

With 2½ Foot Wall

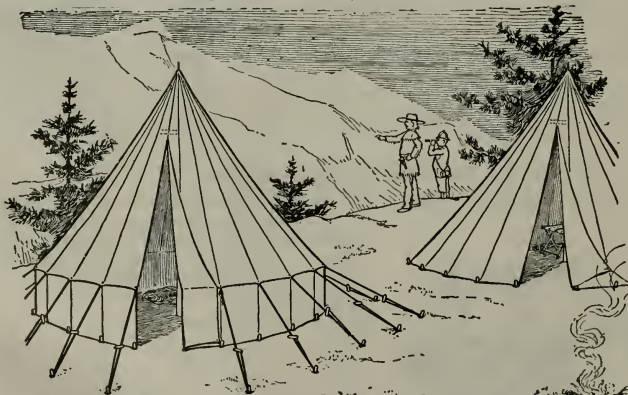
Size	Height of Pole	8 oz. Single Filling Duck	10 oz. Single Filling Duck	12 oz. Double and Twisted Filling Duck	Size	Height of Pole	Height of Wall	8 oz. Single Filling Duck	10 oz. Single Filling Duck	12 oz. Double and Twisted Filling Duck
7x 7...	7	\$ 6.30	\$ 7.61	\$ 9.71	7x 7...	7	2-6	\$ 8.64	\$10.44	\$13.32
9x 9...	7	9.00	10.88	13.88	9x 9...	8	2-6	12.24	14.79	18.87
12x12...	8	12.96	15.66	19.98	12x12...	9	3	20.52	24.80	31.64

Any additional hand roping, add 7c per lineal foot net.

If 9-inch sod cloth is wanted around bottom of tent, add 2c per lineal foot net.

SIBLEY TENTS

Complete with Pole, Stakes, etc.



Without Wall

MACHINE SEWED

With 2½ Foot Wall

Size	Height	8 oz. Single Filling Duck	10 oz. Single Filling Duck	12 oz. Double and Twisted Filling Duck	Size	Height	8 oz. Single Filling Duck	10 oz. Single Filling Duck	12 oz. Double and Twisted Filling Duck
10 feet....	8	\$ 9.12	\$10.92	\$13.80	10 feet....	8	\$12.54	\$15.02	\$18.98
12 feet....	9	12.54	15.02	18.98	12 feet....	9	15.20	18.20	23.00
14 feet....	10	16.72	20.02	25.30	14 feet....	10	18.62	22.30	28.18
16 feet....	11	20.14	24.12	30.48	16 feet....	11	24.70	29.58	37.38
					20 feet....	13	36.86	44.14	55.78

CAMPING TENTS

With Portable Walls and Partitions. Complete With Poles, Stakes, Guys and Two Partitions.



Copyright 1899
Geo B Carpenter & Co

MACHINE SEWED

For "Camping" this style of Tent will be found very desirable. By raising the end walls, awnings can be formed providing a space which can be used for cooking. Side walls are detachable at corners, so they can be rolled up and tied to the eaves. Two partitions are furnished, which can be quickly changed to lessen or increase the size of rooms. If tents with higher walls than listed are required, add 5 per cent to list for each foot or fractional part of a foot of wall so added.

Flies will be furnished without poles at two-thirds the price of tent.

If any hand roping is wanted, add 7c per lineal foot net.

If 9-inch sod cloth is wanted around bottom of tent, there will be an additional charge of 3c per lineal foot net.

If walls are wanted of one grade lighter duck than top, deduct 3%.

Partitions are made of 8-oz. duck, 6c per square foot, and subject to same discount as tents.

Size		Height of Center Poles	Height Wall	10 oz Double Filling	12 oz Double Filling	12 oz. Army
12	x14	11	6	\$47.93	\$55.35	\$62.10
12	x16 ½	11	6	53.25	61.50	69.00
12	x18 ½	11	6	58.58	67.65	75.90
12	x21	11	6	63.90	73.80	82.80
12	x24	11	6	69.23	79.95	89.70
12	x28	11	6	78.28	90.41	101.43
12	x30	11	6	83.60	96.56	108.33
14	x16 ½	12	6	61.24	70.73	79.35
14	x18 ½	12	6	67.10	77.49	86.94
14	x21 ½	12	6	72.95	84.26	94.53
14	x23 ½	12	6	78.81	91.02	102.12
14	x28	12	6	89.99	103.94	116.61
14	x30	12	6	95.85	110.70	124.20
16 ½	x18 ½	13	6	74.55	86.10	96.60
16 ½	x21 ½	13	6	80.90	93.40	104.88
16 ½	x23 ½	13	6	87.06	100.55	112.82
16 ½	x28	13	6	100.11	115.62	129.72
16 ½	x30	13	6	106.50	123.00	138.00

FAMILY COMPARTMENT TENTS

Complete with Poles, Stakes, Guys, Partitions, etc.



Size	Height of Pole	Height of Wall	10 oz. S. F.	8 oz. D. F.	10 oz D. F. or 8 oz. Army	12 oz. D. F.	10 oz. Army	12 oz. Army	15 oz. Army
9x18-6	10	6	\$48.15	\$44.10	\$51.53	\$58.95	\$58.50	\$65.70	\$78.53
12x19	11	6	57.78	52.92	61.83	70.74	70.20	78.84	94.23
12x21	11	6	63.13	57.82	67.56	77.29	76.70	86.14	102.96
14x21	12	6	69.55	63.70	74.43	85.15	84.50	94.90	113.43
14x23	12	6	76.24	69.83	81.59	93.33	92.62	104.03	124.33
16x23	13	6	84.00	76.93	89.88	102.84	102.05	114.61	136.98
16x26	13	6	90.42	82.81	96.75	110.70	109.85	123.37	147.45
16x28	13	6	96.84	88.69	103.62	118.55	117.65	132.13	157.92

These tents are hand roped on the rim and reinforced on hips with webbing; double guy ropes on corner.

For 9 inch sod cloth, around bottom of tent, add 2c per lineal foot net.

If higher walls are wanted, add 10% to list for each foot.

Partitions are made of 8-oz. duck at 6c per square foot, subject to same discount as tents.

Flies will be furnished without poles at two-thirds the price of tent.

For family camping tents the above will be found very useful. The middle section of the wall on either side can be extended like an awning as shown in cut, allowing a free circulation of air.

SQUARE HIP ROOF TENTS

Complete with Poles, Stakes, Guys, etc.

These Tents are made in best manner, properly roped where strength is required. Add 10 per cent for each additional foot or fractional part of a foot of wall, if higher walls than are listed are required. We can furnish with regular door if desired.

They are hand roped on rim and banded on hips up to 16x16. Larger sizes are fully hand roped every three cloths or seven feet.

If walls are wanted one grade lighter duck than top, deduct 7 per cent.

Flies will be furnished without poles at two-thirds the price of the tent.

If 9 inch sod cloth is wanted around bottom of tent, add 2c per lineal foot net.



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Geo. B. Carpenter & Co.

MACHINE SEWED

Size	Height of Pole	Height of Wall	8 oz. Single Filling Duck	10 oz. Single Filling Duck	10 oz. Double Filling	12 oz. Double Filling	12 oz. Army	15 oz. Army or No. 8 Duck
7x 7	9-6	6	\$20.88	\$24.14	\$25.77	\$29.36	\$32.63	\$38.82
9x 9	10	6	28.32	32.75	34.96	39.83	44.25	52.66
12x12	11	6	38.40	44.40	47.40	54.00	60.00	71.40
12x14	11	6	42.72	49.40	52.73	60.08	66.75	79.43
14x14	12	6	48.00	55.50	59.25	67.50	75.00	89.25
16x16	13	6	72.60	81.68	86.21	96.20	105.27	122.51
18x18	14	6	87.60	98.55	104.03	116.07	127.02	147.83
20x20	14	6	98.40	110.70	116.85	130.38	142.68	166.05
24x24	15	6	127.80	143.78	151.76	169.34	185.31	215.66
30x30	15	6	177.00	199.13	210.19	234.53	256.65	298.69
40x40	20	6	279.00	313.88	331.31	369.68	404.55	470.81

OCTAGON GARDEN TENTS

Complete with Poles, Stakes, Guys, etc.

If higher walls than those listed are wanted, add 5 per cent for each foot or fractional part thereof.

Flies will be furnished without poles at two-thirds price of tent.



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MACHINE SEWED

Diameter	Wall	Pole	8 oz. Double Filling Duck	10 oz. Double Filling	10 oz. Army
12	6	11-6	\$36.72	\$42.66	\$48.24
18	6	13	60.69	70.51	79.73
23	7	15	93.84	109.02	123.28

PALMETTO LAWN TENTS

Complete with Poles, Stakes, etc.

Copyright 1899
Geo. B. Carpenter & Co.MACHINE SEWED
WITH AWNING EXTENSION

Size	Height of Pole	8 oz. S. F.	10 oz. S. F.	10 oz. D. F.	Champion Stripe	Duplex Stripe	Red, Blue and Brown Army Stripe
7x 7.....	8	\$11.76	\$13.86	\$14.91	\$14.56	\$15.12	\$18.48
8x 8.....	8	13.44	15.84	17.04	16.64	17.28	21.12
9x 9.....	9	16.38	19.31	20.77	20.28	21.06	25.74
10x10.....	10	18.48	21.78	23.43	22.88	23.76	29.04
12x12.....	10	21.00	24.75	26.63	26.00	27.00	33.00

WITHOUT AWNING EXTENSION

Size	Height of Pole	8 oz. S. F.	10 oz. S. F.	10 oz. D. F.	Champion Stripe	Duplex Stripe	Red, Blue and Brown Army Stripe
5x5.....	6	\$ 5.20	\$ 6.18	\$ 6.66	\$ 6.50	\$ 6.76	\$ 8.32
7x7.....	7-6	8.80	10.45	11.28	11.00	11.44	14.08
8x8.....	8	10.00	11.88	12.81	12.50	13.00	16.00
9x9.....	8-6	13.60	16.15	17.43	17.00	17.68	21.76

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Geo. B. Carpenter & Co.

BEACH TENT

Complete with Poles, Guy Ropes and Pins

Those desiring Tents for bathing and picnic parties, or outdoor games, will find the one illustrated peculiarly adapted to their requirements. It rolls up snugly, and the center pole being spliced makes it very convenient to carry. The feature of this Tent is the ease and quickness with which it can be put up and taken down. We make these of fancy colored striped duck.

10x10 feet, pole 9 feet

12x12 feet, pole 9 feet

Price on Application

OBLONG TENTS, SQUARE ENDS

Complete with Poles, Stakes, Guys, etc.

Copyright 1899
Geo. B. Carpenter & Co.

MACHINED SEWED

These prices are for Tents made in the very best manner, thoroughly roped where strength is required.

If higher walls than list specifies are wanted, add 10 per cent to list for each additional foot or fractional part of a foot of wall so added.

If walls are wanted one grade lighter duck than top, deduct 3 per cent.

Flys will be furnished without poles at 75 per cent the price of tent.

Tents made of fast colors, tan, khaki or brown, add 30 per cent.

Size	Height of Poles	Height of Wall	10 oz. Dbl. Filling	12 oz. Dbl. Filling	12 oz. Army	15 oz. Army, or No. 8 Duck	Size	Height of Poles	Height of Wall	10 oz. Dbl. Filling	12 oz. Dbl. Filling	12 oz. Army	15 oz. Army, or No. 8 Duck
7x12	9-6	6	\$ 33.78	\$ 38.65	\$ 43.07	\$ 51.48	28x38	16	7	253.65	283.02	309.72	360.45
7x14	9-6	6	38.36	43.89	48.91	58.46	28x42	16	7	280.01	312.44	341.91	397.91
9x14	10	6	42.94	49.12	54.75	65.44	28x47	16	7	306.38	341.85	374.10	435.38
9x16	10	6	48.66	55.67	62.05	74.16	28x51	16	7	332.74	371.27	406.29	472.84
9x19	10	6	53.82	61.57	68.62	82.02	28x56	16	7	359.81	401.48	439.35	511.31
12x19	12	7	70.99	80.52	108.19		28x60	16	7	387.60	432.48	473.28	553.80
12x21	12	7	78.43	89.74	100.01	119.53	28x70	16	7	442.46	493.70	540.27	623.76
12x23	12	7	87.02	99.56	110.96	132.62	30x50	16	7	339.86	379.21	414.99	482.96
14x21	13	7	86.45	98.91	110.23	131.75	30x60	16	7	393.30	438.84	480.24	558.90
14x23	13	7	93.49	107.42	119.72	143.09	30x70	16	7	446.74	498.47	545.49	634.80
16x23	14	7	125.40	139.37	153.12	178.20	30x80	16	7	499.46	557.30	609.37	709.76
16x26	14	7	137.51	153.44	167.91	195.41	33x32	17	7	278.59	310.85	340.17	395.89
16x28	14	7	146.78	163.77	179.22	208.58	33x42	17	7	307.09	342.65	374.97	436.39
19x28	15	7	162.45	181.26	198.36	230.85	33x47	17	7	335.59	374.46	409.77	476.89
19x33	15	7	180.26	201.14	220.11	256.16	33x52	17	7	364.09	406.25	444.57	517.39
19x40	15	7	212.33	236.91	259.26	301.73	33x56	17	7	392.59	438.05	479.35	557.89
23x30	16	7	191.66	213.86	234.03	272.36	33x60	17	7	421.09	469.85	514.17	598.39
23x33	16	7	203.78	227.37	248.32	289.58	33x70	17	7	478.09	532.45	583.77	679.39
23x38	16	7	228.00	254.40	278.40	324.00	33x80	17	7	535.09	597.05	656.37	760.39
23x42	16	7	249.38	281.43	307.98	358.43	37x47	18	7	361.24	403.07	441.09	513.24
23x47	16	7	276.45	308.72	337.56	392.85	37x52	18	7	391.88	437.25	478.50	556.88
23x51	16	7	300.68	335.60	367.14	427.28	37x56	18	7	422.51	471.44	515.91	600.41
23x60	16	7	349.13	389.55	426.30	496.13	37x60	18	7	453.15	505.62	553.32	643.95

REFRESHMENT TENTS

Complete with Poles, Stakes, Guys and Keys

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Geo. B. Carpenter & Co.

These Tents are generally used for commercial purposes, for the sale of refreshments or fancy articles at fairs, etc. Can also be used for the exhibition of goods.

With walls detachable and lace corners so walls can be raised as awning extension. Tent has 14-inch border or sun curtain all around. Hand roped on rim or eaves and stripped with webbing on gables. Double guy ropes on corners.

If higher walls are wanted, add 10% to list for each foot.

Any additional hand roping, add 7c per lineal foot net.

MACHINE SEWED
With One Side Wall Detachable

Size	Height of Pole	Height of Wall	8 oz. S. F.	10 oz. S. F.	10 oz. D. F.	12 oz. D. F.	Champion Stripe	Duplex Stripe	Army Stripe
9x14.....	10	7	\$41.76	\$48.29	\$51.55	\$58.73	\$50.46	\$52.20	\$62.64
9x16.....	10	7	46.56	53.84	57.47	65.48	56.26	58.20	69.84
9x19.....	10	7	51.36	59.39	63.40	72.23	62.02	64.20	77.04
12x16.....	11	7	53.76	62.16	66.36	75.60	64.96	67.20	80.64
12x19.....	11	7	59.04	68.27	72.88	83.03	71.34	73.80	88.56
12x21.....	11	7	64.32	74.37	79.40	90.45	77.72	80.40	96.48
14x21.....	12	7	72.00	83.25	88.88	101.25	87.00	90.00	108.00
14x23.....	12	7	77.76	89.91	95.99	109.35	93.96	97.20	116.64

GOLF TENTS

Complete with Poles, Stakes, Guys, etc.

Are made in best possible manner, of the better grades of white duck, or fancy stripe, properly roped and strengthened. Samples of stripes on application.

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Geo. B. Carpenter & Co.

MACHINE SEWED

Size	Perpendicular	10 oz. Double Army Duck	12 oz. Double Army Duck	12 oz. Army or Fancy Stripe
7 x12	9	\$13.63	\$15.53	\$16.56
7 x14	9	16.00	18.23	19.44
9 x14	10	20.15	22.95	24.48
9 x16 1/2	10	23.11	26.33	28.08
9 x19	10	26.66	30.23	32.40
12 x19	11	34.96	39.33	42.48
12 x21	11	39.11	44.55	47.52
12 x23 1/2	11	43.25	49.23	52.56
14 x21	11	42.66	48.60	51.84
14 x23 1/2	11	46.81	53.33	56.88
16 1/2 x23 1/2	13	55.70	63.45	67.68
16 1/2 x26	13	61.03	69.53	74.16
16 1/2 x28	13	66.36	75.60	80.64
19 x28	14	76.43	87.08	92.88
19 x33	14	88.88	101.25	108.00

PHOTOGRAPHERS' TENTS

Complete with Poles, Stakes, Guys and Keys

Copyright 1899
Geo. B. Carpenter & Co.

MACHINE SEWED

The Photographer's Tents are used for the purpose the name implies. They are fitted with single or double skylight openings, extending close to the eave of the tents or down the wall, and furnished with flap for a covering when not in use. We make dark rooms, when desired, of black duck, lined with either red or yellow material, making a perfectly light-proof compartment for developing, etc.

If higher walls are wanted than list specifies, add 10% for each additional foot. Dark room size 6x6, \$20.72. Dark rooms are made of 8-oz. blue or black duck, and lined with red or yellow drill. Dark rooms size 4½x4½, \$16.28. These rooms are fitted with poles. Door laps 29 inches. For side sky-light, add \$2.00 net extra. Any hand roping on tents, add 7c per lineal foot.

Sizes	Height of Center	Height of Wall	8 oz. Single Filling Duck	10 oz. Single Filling Duck	10 oz. Double Filling	12 oz. Double Filling
12x14.....	11	6	\$40.92	\$47.90	\$51.38	\$59.06
12x16.....	11	6	45.32	53.05	56.91	65.41
12x18.....	11	6	49.72	58.20	62.43	71.76
12x21.....	11	6	54.12	63.35	67.96	78.11
12x24.....	11	6	58.52	68.50	73.48	84.46
12x28.....	11	6	66.00	77.25	82.88	95.25
12x30.....	11	6	70.40	82.40	88.40	101.60
14x16.....	12	6	51.92	60.77	65.20	74.93
14x18.....	12	6	56.76	66.44	71.27	81.92
14x21.....	12	6	61.60	72.10	77.35	88.90
14x24.....	12	6	66.44	77.76	83.43	95.89
14x28.....	12	6	76.12	89.10	95.58	109.86
14x30.....	12	6	80.96	94.76	101.66	116.84
16x18.....	13	6	62.48	73.13	78.46	90.17
16x21.....	13	6	68.64	80.34	86.19	99.06
16x24.....	13	6	73.92	86.52	92.82	106.68
16x28.....	13	6	84.92	99.40	106.63	122.56
16x30.....	13	6	89.76	105.06	112.71	129.54

GRAVE TENTS

Complete with Poles and Stakes



Size	Height of Wall	Without Wall			Wall Half Way Around			With Wall on Four Sides. Detachable		
		8 oz. Single Filling	10 oz. Single Filling	12 oz. Double Filling	8 oz. Single Filling	Top 10 oz. Single Filling Wall 8 oz. Single Filling	Top 12 oz. Double Filling Wall 8 oz. Single Filling	8 oz. Single Filling	Top 10 oz. Single Filling Wall 8 oz. Single Filling	Top 12 oz. Double Filling Wall 8 oz. Single Filling
7 x12	5	\$10.90	\$12.50	\$15.60	\$16.00	\$17.60	\$20.65	\$21.05	\$22.65	\$25.70
7 x14	5	12.70	14.55	18.80	18.40	20.25	23.75	24.10	26.00	29.45
9 x14	6	15.85	18.15	22.55	23.35	25.70	30.10	27.20	33.15	37.60
9 x16½	6	18.25	20.80	25.75	26.40	29.00	34.00	34.75	37.30	42.35
9 x19	6	20.50	23.45	29.20	29.45	32.40	38.10	38.40	41.30	47.05
12 x19	6	24.80	28.25	35.20	34.40	38.00	44.80	44.15	47.70	54.50
12 x21½	6	27.60	31.70	39.30	38.00	42.80	49.60	48.40	52.40	60.00
14 x21½	6	31.95	36.60	45.35	43.05	47.70	56.50	54.30	58.90	67.70
14 x23½	6	35.45	40.50	50.35	47.30	52.50	62.25	59.10	64.25	74.10
16½ x23½	6	40.50	46.50	57.60	53.10	58.90	70.25	65.60	71.50	82.75
16½ x26	6	44.15	50.75	62.95	57.50	63.85	76.15	70.70	77.10	89.35
16½ x28	6	48.25	55.20	68.55	62.10	69.10	82.40	76.10	83.05	96.40
19 x28	6	54.30	62.10	77.20	69.00	76.80	91.85	83.70	91.50	106.55
19 x33	6	63.00	72.00	89.45	79.10	88.15	105.50	95.20	104.35	121.75

If higher walls are wanted, add 6 per cent for each foot, or fractional part of wall so added.

Size usually used is 12x19 feet.

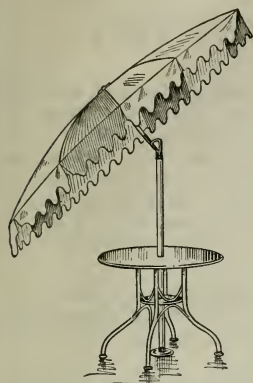


Fig. 512A

LAWN CANOPY

Size Spread Eight Feet.

PRICE LIST.

Heavy Drillseach \$ 9.00
 Fancy Stripeeach 11.00

Blue and White-Red and White-Orange and White.

Prices include a heavy Ground Screw with a receptacle for the handle.

TABLE EXTRA

36 inch diametereach \$15.00
 42 inch diametereach 16.00
 48 inch diametereach 17.00

GARAGE TENTS

Complete with Poles and Stakes.

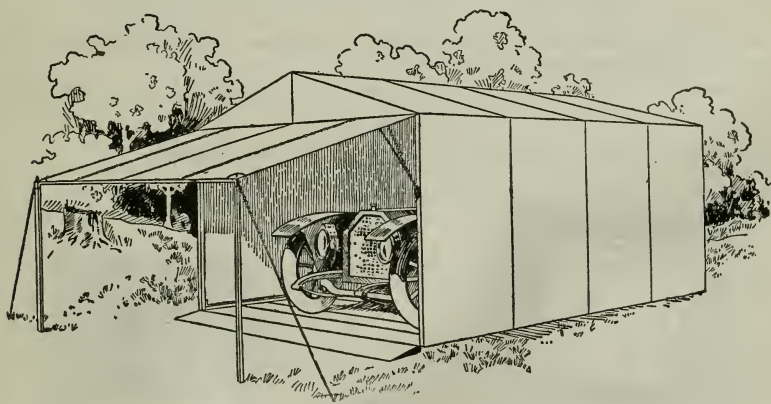


Fig. 512B

Top is 13½ oz. Army Tan Textol. Walls and ends 10 oz. D. F. Duck.

Sizes listed are most generally used. Any size to order. Prices and samples of material on application.

For	Size, feet	Height, Center, feet.	Height, Wall, feet.
Runabout	10x12	10	8
Tonneau	10x16	10	8
Touring Car	10x20	10	8

THE LA POINTE ADJUSTABLE WINDOW TENT

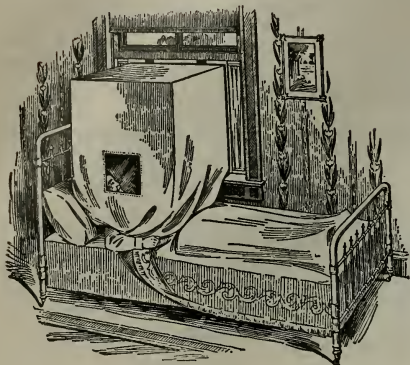


Fig. 519A

The La Pointe Adjustable Window Tent is unique in its construction, being a departure from all previous attempts in the building of window tents, and open air sleeping rooms. It is intended to, and does permit the user to have the benefit of fresh air, at the same time keeping the body warm while sleeping in his or her bedroom. It can be used either in connection with a bed or a cot as desired.

It consists of an adjustable window frame, the center part screened, and both sides, which adjust to fit window, covered with a special closely woven duck.

It will fit any window varying from 2 feet 10 inches to 4 feet 9 inches wide. It is easily and quickly adjusted. Any desired size to order at special price.

This illustration shows tent used in connection with a bed. It has a transparent window 10 inches square permitting occupant to see into the room.

The opening is fitted with a tape which enables the user to fasten it snugly around the neck.

The pillow can be put in tent or left on bed as desired.

Dimensions of tent are 38 inches by 28 inches by 28 inches in height.

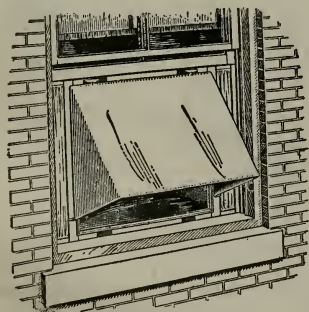


Fig. 519B

This illustration shows exterior with awning. The awning can be attached before tent is placed in window and is easily and quickly adjusted or removed.

The awning not only protects occupant from rain and snow, but acts as a wind-break as well.



Fig. 519C

This illustration shows exterior view, screen center, adjustable duck covered sides without awning.

Tent when closed makes a package 34 inches by 30 inches by 2 inches thick. It is packed in a neat canvas bag.

Price complete, khaki duck.....each \$15.00

THE LA POINTE PORTABLE HOUSE TENT

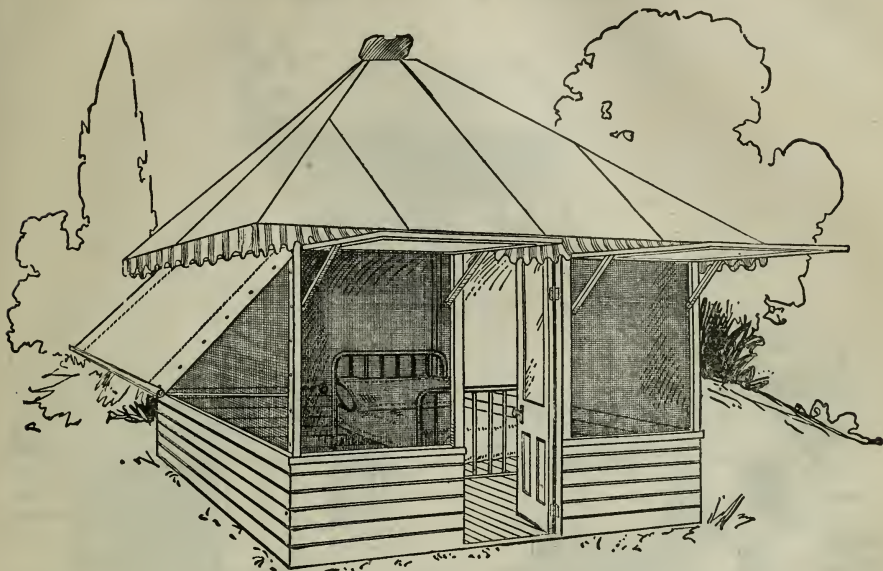


Fig. 517

The La Pointe Portable House Tent is in reality a handsome cottage complete with door, windows, floor and screens. The top is double and made of heavy serviceable canvas. The fly, or outer roof, extends 12 inches beyond the edge of the inner roof, with ample air space between the two roofs to insure perfect ventilation and equable temperature. The outer roof has a handsome scalloped valance at the eaves. All sides of the tent have wire netting screens in addition to the canvas side curtains. The side curtains are fastened to the frame with Murphy fasteners on each side, and the canvas is so arranged that it can be pulled up as a curtain, or, if preferred, extended as an awning. This arrangement insures the most perfect ventilation either in summer or winter.

The front awnings and side curtains are operated from within the Tent. The side curtains, if so desired, can also be arranged as awnings, as shown in cut, at a small additional cost.

The frame of the La Pointe Tent is rigidly constructed of well-seasoned pine, carefully fitted and well braced. It is bolted together in a very simple manner and can be easily put up or taken down by anyone following the directions sent with each Tent. To further insure perfect fit of all parts of the frame, as well as the canvas covers, screens, etc., the Tent is completely erected and carefully inspected in our shop before being packed for shipment.

The La Pointe Tent has been very highly endorsed by Dr. J. W. Pettit, of the Ottawa Tent Colony, and other leading physicians. It was exhibited at the Household Show held in Chicago, and very favorably commented on by all who examined it.

As a permanent home for campers or invalids, as a play-house for children, and for many other purposes, it is the most desirable Tent in the market. It carries our guarantee to be insect-proof, water-proof and weatherproof.

Size of Tent	Height of Center feet	Height of Wall feet	Size of Fly	Price Natural Finish	Extra for Painted Woodwork	Extra for Awning Attachments on Side Curtains
9½ x 11½	10	6	11½ x 13½	\$196.00	\$20.50	\$10.00
12 x 14	10	6	14 x 16	245.00	24.00	10.00
12 x 16	10	6	14 x 18	285.00	28.00	10.00
12 x 18	10	6	14 x 20	324.00	32.00	10.00
12 x 20	10	6	14 x 22	352.50	36.00	10.00
14 x 16	10	6	16 x 18	343.00	39.50	10.00
14 x 18	10	6	16 x 20	383.00	43.00	12.00
14 x 20	10	6	16 x 22	440.00	47.00	12.00
14 x 24	10	6	16 x 26	509.00	51.00	12.00
14 x 28	10	6	16 x 30	606.00	55.00	12.00
14 x 30	10	6	16 x 32	627.00	59.00	12.00

Prices include frame, flooring, doors, screws, hardware, canvas covering, etc., complete, delivered F. O. B. cars, Chicago.

An Extra Charge of \$5.00 is Made for Crating Each Tent for Shipment

THE CARPENTER PORTABLE COTTAGE TENT

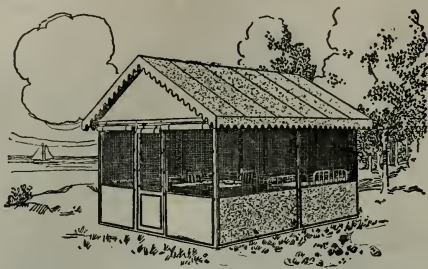


Fig. 1
Curtains Rolled Up.

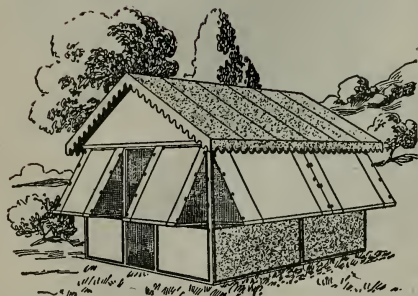


Fig. 2
Curtains Extended Outward as Awnings.

The Carpenter Portable Cottage Tent is constructed throughout of the best possible materials in a thoroughly workmanlike manner. The roof is double and is made of heavy serviceable Khaki Duck. The outer roof, or fly, is 6 inches from the inner roof, thus providing an ample air space to insure perfect ventilation. The fly extends 9 inches over front and rear and both sides of tent, and its outer edge is finished with a handsome scalloped valance bound in white braid.

The sides also are made of heavy serviceable Khaki Duck from floor line to a point about 30 inches above; the upper part is entirely enclosed with wire screens and screened door with canvas side curtains on the outside. These curtains are provided with rollers and can be operated from within the tent. They are also fitted with Murphy fasteners to permit of tight closing when desirable. At a small additional cost the curtains can be arranged to extend outward as awnings.

The framework is constructed of well seasoned hard pine, smoothly finished and neatly painted. All parts are carefully fitted, plainly marked and bolted together with thumb screws in a very simple manner. The entire tent can be erected or taken down without the use of any tools whatsoever.

Before being packed for shipment each tent is rigidly inspected and completely erected.

This Tent was designed to be used with a wooden floor. Our prices, however, do not include a wooden floor, as we advise the purchase of this wherever possible from your local mechanic in order to save freight. If desired we can furnish a floor of hard pine at an additional cost of \$0.10 per sq. ft.

Fig. 1 shows Tent with curtains rolled up. Fig. 2 shows Tent with curtains extended outward as awnings. Fig. 3 shows Tent with curtains down and securely fastened.

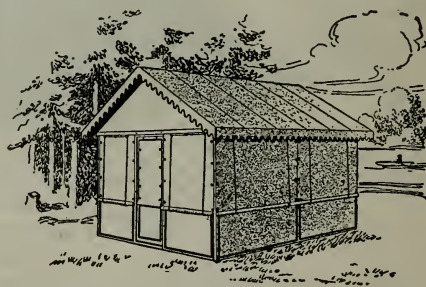


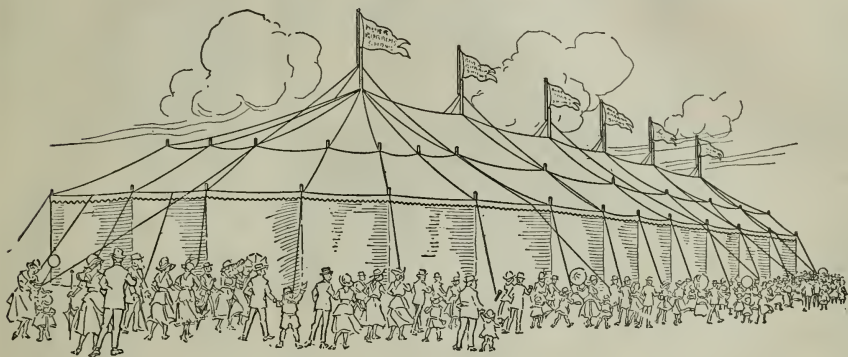
Fig. 3
Curtains Down and Securely Fastened.

Size feet	Approximate Weight Without Floor, lbs.	Price	Size feet	Approximate Weight Without Floor, lbs.	Price
7x 9	325	\$ 95.00	12x12	475	\$175.00
10x12	400	130.00	12x18	550	220.00
10x18	475	180.00	12x24	625	260.00
10x24	550	220.00	12x30	700	310.00
10x30	625	250.00			

Packed ready for shipment F. O. B. Chicago.

An extra charge of \$5.00 is made for crating each Tent for shipment.

CIRCUS CANVASES



These tents are made 60 feet in diameter and larger, of drills and ducks especially manufactured for our trade, with one or more middle pieces to make any desired length. The tops are reinforced with strong extra bands along the ridge, quarter, intermediate sections and rim, and in addition are roped every five feet or two cloths, and also along the ridge, quarter and rim. The tops are laced at each center pole, and each job is furnished complete with center, side and quarter poles, tackles, bail rings, stakes and all necessary guy ropes.

For a moderate extra cost our tents can be waterproofed by our own special process, and we believe the extra expenditure is more than offset in the increased life and usefulness of the tent.

While these big tents are used principally for show purposes, they are also in demand for political gatherings, chautauquas, fairs and other outdoor conventions. We generally carry a few of the smaller stock sizes on hand, but in the main these tents are built to order, to suit the particular requirements of the purchaser.

We shall be pleased to quote and give full specifications on any size tent desired, and our long experience in supplying some of the largest shows in the country is the best recommendation we can offer.

GEO. B. CARPENTER & CO.

OBLONG ROUND END TENTS PUSH POLE

Same style Tent as illustrated on preceding page.

Hand roped on rim and banded every two cloths or 5 feet. 14 inch Border or Sun Curtain Detachable Walls. Side Poles every five feet.

Complete with Poles, Banded Stakes and Guy Ropes

Size	Height of Pole	Height of Wall	250 Drill or 6½ oz.	8 oz. Double Filling	10 oz. Double Filling	8 oz. Army	10 oz. Army	12 oz. Army
12x21.....	11-6	6	\$ 52.51	\$ 60.18	\$ 69.92	\$ 68.44	\$ 79.06	\$ 88.50
18x24.....	13	6	71.20	81.60	94.60	92.80	107.20	120.00
18x31.....	13	6	88.56	101.49	117.91	115.42	133.33	149.25
18x36.....	13	6	100.13	114.75	133.31	130.50	150.75	168.75
23x30.....	15	7	104.13	119.34	138.85	135.72	156.78	175.50
23x37.....	15	7	125.49	143.82	167.09	163.56	188.94	211.50
23x44.....	15	7	146.85	168.30	195.53	191.40	221.10	247.50

Push Poles, Hand Roped on Rim and Every Three Cloths Over Top. Side Poles Every 7 feet.

14 inch Border or Sun Curtain

Size	Height of Pole	Height of Wall	250 Drill or 6½ oz.	8 oz. Double Filling	10 oz. Double Filling	8 oz. Army	10 oz. Army	12 oz. Army
26x33.....	16	7	\$152.69	\$169.65	\$191.18	\$187.92	\$211.41	\$232.32
26x40.....	16	7	183.69	204.10	230.01	226.08	254.34	279.46
26x47.....	16	7	214.70	238.55	268.83	264.24	297.27	326.63
26x54.....	16	7	245.70	273.00	307.65	302.40	340.20	373.80
30x44.....	16	7	212.94	236.60	266.63	262.08	294.84	323.96
30x51.....	16	7	245.70	273.00	307.65	302.40	340.20	373.80
30x58.....	16	7	277.88	308.75	347.94	342.00	384.75	422.75
30x65.....	16	7	310.64	345.15	388.96	382.32	430.11	472.59
30x72.....	16	7	342.81	380.90	429.25	421.92	474.66	521.54
35x49.....	17	7	253.89	282.10	317.91	312.48	351.54	386.26
35x56.....	17	7	289.56	321.75	362.59	356.40	400.95	440.55
35x63.....	17	7	325.25	361.40	407.27	400.32	450.36	494.84
35x70.....	17	7	360.95	401.05	451.95	444.24	499.77	549.13
40x54.....	19	7	304.79	338.65	381.63	375.12	422.01	463.69
40x61.....	19	7	345.15	383.50	432.18	424.80	477.90	525.10
40x68.....	19	7	385.52	428.35	482.72	474.48	533.79	586.51
40x75.....	19	7	425.88	473.20	533.26	524.16	589.68	647.92
40x82.....	19	7	466.25	518.05	583.80	573.84	645.57	709.33

MERRY-GO-ROUND TOPS

Without walls, poles or stakes. Tents used for swings or merry-go-rounds. Hand roped rim and every two or three cloths. Tents have 14 inch border or sun curtain. Made to lace up one side and fitted with guy ropes. For lacing on two sides add \$5.00 extra.

Diameter	Raise	250 Drill or 6½ oz.	8 oz. Double Filling	10 oz. Double Filling	8 oz. Army	10 oz. Army	12 oz. Army
26-ft.....	9-ft.	\$ 62.67	\$ 70.15	\$ 79.64	\$ 78.20	\$ 88.55	\$ 97.75
30-ft.....	9-ft.	80.11	89.67	101.80	99.96	113.19	124.95
35-ft.....	10-ft.	103.55	115.90	131.58	129.20	146.30	161.50
40-ft.....	12-ft.	134.07	150.06	170.36	167.28	189.42	209.10
48-ft.....	13-ft.	188.03	210.45	238.91	234.60	265.65	293.25
50-ft.....	14-ft.	206.55	231.20	262.46	257.72	291.83	322.15
52-ft.....	15-ft.	227.81	254.98	289.47	284.24	321.86	355.30

SIDE WALLS

Height	6½ oz. Drill	7 oz. Single Filling	8 oz. Single Filling	10 oz. Single Filling	12 oz. Single Filling
6-ft. Per Running Foot.....	\$0.31	\$0.31	\$0.37	\$0.44	\$0.51½
7-ft. Per Running Foot.....	.39	.39	.43	.50	.59
8-ft. Per Running Foot.....	.44	.44	.48½	.57½	.67
9-ft. Per Running Foot.....	.49	.49	.54	.64½	.74½
10-ft. Per Running Foot.....	.54	.54	.60	.71	.82½
11-ft. Per Running Foot.....	.59½	.59½	.65½	.78	.90
12-ft. Per Running Foot.....	.65	.65	.71	.85	.98
13-ft. Per Running Foot.....	.69½	.69½	.74½	.91	1.06
14-ft. Per Running Foot.....	.75	.75	.83	.98½	1.14

The above list is based on walls roped on top and bottom with pole holes and guys at every 3 or 4 cloths. Without poles.

ROUND TENTS



PUSH POLE

Complete with Poles, Banded Stakes, etc.

Hand roped on rim. Webbing and side pole every five feet or two cloths. 14 inch border or sun curtain.

Diam. feet	Height of Pole	Height of Wall	250 Drill or 6 1/2 oz.	8 oz. Double Filling	10 oz. Double Filling	8 oz. Army	10 oz. Army	12 oz. Army
12	11-6	6	\$32.40	\$36.72	\$42.66	\$41.76	\$48.24	\$54.00
18	13	6	53.55	60.69	70.51	69.02	79.73	89.25
23	15	7	82.80	93.84	109.02	106.72	123.28	138.00

Fully hand roped and side pole every seven feet or three cloths. 14 inch border or sun curtain.

Diam. feet	Height of Pole	Height of Wall	250 Drill or 6 1/2 oz.	8 oz. Double Filling	10 oz. Double Filling	8 oz. Army	10 oz. Army	12 oz. Army
26	16	7	\$120.51	\$133.90	\$150.90	\$148.32	\$166.86	\$183.34
30	16	7	149.18	165.75	186.79	183.60	206.55	226.95
35	17	7	182.52	202.80	228.54	224.64	252.72	277.68
40	19	7	224.05	248.95	280.55	275.76	310.23	340.87
44	21	7	262.67	291.85	328.90	323.25	363.70	399.60

If tents are made to holst with block and tackle, add 6 per cent to list.

WITH BALE RING, BLOCK AND TACKLE

Complete with Poles, Stakes, Guys, etc.

Fully hand roped on rim, and every three cloths. Made in two sections which lace together. Walls are detachable.

Diameter feet	Center feet	Height of Wall	250 Drill or 6 1/2 oz.	8 oz. Double Filling	10 oz. Double Filling	8 oz. Army	10 oz. Army
52	23	8	\$414.96	\$455.52	\$507.00	\$499.20	\$555.36
60	25	8	547.96	601.52	669.50	659.20	733.36
70	25	8	678.97	745.33	829.56	816.80	908.69
80	26	8	822.60	903.01	1005.06	989.60	1100.93
90	30	9	1147.79	1259.98	1402.38	1380.80	1536.14

The 52 foot tent has stay bands between rim and peak. Larger tents have quarter band and two stay bands and fitted with quarter poles.

If walls are not wanted, deduct 30 per cent.

If walls are wanted one grade lighter duck than top, deduct 3 per cent.

If higher walls are wanted, add 5 per cent to list for each additional 6 inches.

Tents made of fast color, tan, khaki brown, add 30 per cent.

IMPROVED CONCESSION TENTS

With or Without Portable Frame



These Tents are especially constructed for fairs, carnivals, amusements parks and for general outdoor use. They can be quickly put up or taken down and are easily packed for shipment. The prices include 7 foot side walls on all sides, made in four pieces with snaps and rings at top. Any one or all of the four walls can be taken off or put on with ease. The walls are fitted with grommets at all corners and with a light cord for lacing. The framework is smoothly finished and neatly painted. The eaves, front and back of tent are fitted with a scalloped bound curtain 14 inches in depth. This curtain can be furnished in any color.

IMPROVED CONCESSION TENTS

Without Frame

PAINTED PORTABLE FRAME

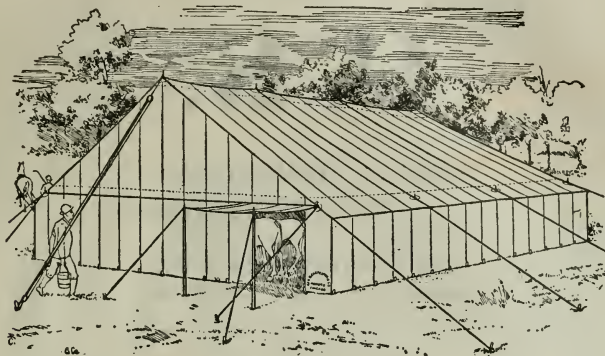
For Improved Concession Tent

Width	Depth	10 oz. D. F. White Duck or Standard Blue or Brown and White Stripe	Fancy Red and White Stripe	8 oz. Khaki Duck	10 oz. Khaki Duck	Width	Depth	Frame Only
10	8	\$32.15	\$39.70	\$37.50	\$42.88	10	8	\$21.60
10	10	37.00	45.60	43.10	49.30	10	10	23.20
12	10	40.80	50.30	47.60	54.40	12	10	24.00
14	10	44.15	54.40	51.50	58.90	14	10	24.80
12	12	43.70	53.85	50.95	58.25	12	12	24.80
14	12	47.30	58.30	55.20	63.95	14	12	26.40
15	12	49.90	61.60	58.25	66.55	15	12	28.80
16	12	52.55	64.80	61.35	70.10	16	12	30.40
18	12	58.10	71.60	67.75	77.45	18	12	32.00



Bally-Ho or Counter Curtain, 3 feet in height, made of fancy red and white or blue and white stripe, together with bound scalloped curtain, fitted with rings at the top, 32c per lineal foot additional.

STABLE TENTS



The Stable Tents are used by contractors and circusmen, and are complete portable barns. One double section, 12 feet is allowed for six horses facing each other from opposite sides of the tent, the mangers being placed down the center of the tent, between the two rows of horses. Canvas mangers are furnished if desired, at an additional cost, or the common feed bag can be used for grain, the hay being placed on the ground. These Tents are easily set up, being provided with tackle for hauling the lines taut when the poles and canvas are up. An entrance is placed at right of each end, the covering of which forms an awning as shown in sketch.

Fully hand roped on Ridge, Eaves, Gables, across Gable Ends and every three widths or seven feet on the top, also around the bottom of wall.

Complete with Poles, Iron Banded Stakes, Guy Ropes and Two Tackles

Size	Height of Pole	Height of Wall	8 oz. Double Filling	10 oz. Double Filling	12 oz. Double Filling	8 oz. Army	10 oz. Army	12 oz. Army	15 oz. Army	17 oz. Army
28x21.....	14	6	\$170.82	\$190.13	\$209.44	\$187.20	\$208.26	\$226.98	\$260.33	\$283.72
28x28.....	14	6	205.86	229.13	252.39	225.60	250.98	273.54	313.73	341.93
28x35.....	14	6	241.63	268.94	296.25	264.80	294.59	321.07	368.24	401.34
28x42.....	14	6	276.67	307.93	339.20	303.20	337.31	367.63	421.64	459.54
28x49.....	14	6	311.71	346.94	382.17	341.60	380.03	414.19	475.04	517.74
28x56.....	14	6	347.48	386.75	426.02	380.80	423.64	461.72	529.55	577.15
28x63.....	14	6	382.52	425.75	468.98	419.20	466.36	508.28	582.95	635.35
28x70.....	14	6	417.56	464.75	511.94	457.60	509.08	554.84	636.35	693.55
28x77.....	14	6	453.33	504.56	555.80	496.80	552.69	602.37	690.86	752.96
28x84.....	14	6	488.37	543.56	598.75	535.20	595.41	648.93	744.26	811.16
30x21.....	14	6	180.31	200.69	221.07	197.60	219.83	239.59	274.79	299.50
30x28.....	14	6	216.81	241.31	265.81	237.60	264.33	288.09	330.41	360.11
30x35.....	14	6	254.04	282.75	311.46	278.40	309.72	337.56	387.15	421.95
30x42.....	14	6	290.54	323.38	356.21	318.40	354.22	386.06	442.77	482.57
30x49.....	14	6	327.04	364.00	400.96	358.40	398.72	434.56	498.31	543.20
30x56.....	14	6	364.27	405.44	446.61	399.20	444.11	484.03	555.12	605.04
30x63.....	14	6	400.77	446.06	491.35	439.20	488.61	532.53	610.74	665.68
30x70.....	14	6	437.27	486.69	536.11	479.20	533.11	581.03	666.76	726.28
30x77.....	14	6	474.50	528.13	581.75	520.00	578.58	630.50	723.49	788.13
30x84.....	14	6	511.00	568.75	626.50	560.00	623.00	679.00	779.11	848.75

Where walls are wanted one grade lighter than the top of tent, an allowance of 4% will be made.

When higher walls are wanted, add 5% for each additional six inches.


If no walls are wanted, an allowance of 21% will be made.

Other hand roping than stated above, will be charged at 7c per lineal foot net.

GEO. B. CARPENTER & CO.

UNITED STATES ARMY TENTS

U. S.

THOS. J. WHEEDEN,
U. S. INSPECTOR.GEO. B. CARPENTER & CO.,
MAKERS  CHICAGO.

Showing manner of stamping government tests.

U. S. ARMY SHELTER TENTS



MACHINE MADE

The Army Shelter, or "Pup" Tent, is one of the most popular styles now in use. It is a great favorite with the Boy Scouts and hikers, who like it because it is light and easily carried. The poles are jointed, which permits them being wrapped up with the pegs and rolled into a small package or roll to sling on the back. Made in two sections, each consisting of one side and half an end, buttoned at the corners.

Five feet, 3 inches long, by 3 feet 6 inches wide, by 3 feet 9 inches center height, 6½ oz. white special yacht twill.....	\$7.00
8 oz. army khaki.....	9.00

Price includes poles, pins and guys.

U. S. ARMY WALL TENTS

WITH FLY

These Tents are furnished with a fly. They are the regulation Camp Tents for officers.

Complete, with poles, stakes, guys, etc. Dimensions are 9 feet long, 9 feet wide, 8 ½ feet high, with 3 foot 9 inch wall. Tent, 12 oz. army duck, with 8 oz. army duck sod cloth. Fly 10 oz. army duck.

	Machine Sewed Hand Finished	Hand Stitched and Hand Finished
White Army Duck...	\$60.00	\$71.00
Drab Army Duck...	63.00	80.00

Prices include fly. If no fly is wanted, deduct 33 ⅓ per cent from list.



Copyright 1899
Geo. B. Carpenter & Co.

U. S. ARMY COMMON TENTS

These Tents are made in two different styles; with closed corners and open corners. They are the regulation Camp Tents for soldiers.

Complete with poles, stakes, guys, etc. Dimensions are 8 feet 4 inches long, by 6 feet 11 inches wide, by 6 feet 10 inches high, with 2 foot wall. Tent, 10 oz. army duck, with 8 oz. duck sod cloth.

WITH CLOSED CORNERS

	Machine Sewed Hand Finished	Hand Stitched and Hand Finished
White Army Duck...	\$33.00	\$44.00
Drab Army Duck...	36.00	47.00

WITH LACED CORNERS

	Machine Sewed Hand Finished	Hand Stitched and Hand Finished
White Army Duck...	\$41.00	\$50.00
Drab Army Duck...	44.00	55.00



Copyright 1899
Geo. B. Carpenter & Co.

U. S. ARMY HOSPITAL TENTS

WITH FLY

Copyright 1899
Geo. B. Carpenter & Co.

Fig. 528A

These are the regulation Hospital Tents and are also used for regimental headquarters.

Complete with poles, stakes, and guys. Dimensions are: 14 feet long, 14 feet wide, 11 feet high, with $4\frac{1}{2}$ foot wall. Tent, 12 oz. army duck with 8 oz. army duck sod cloth. Fly, 10 oz. army duck.

	Machine Sewed Hand Finished	Hand Stitched and Hand Finished
White Army Duck.....	\$115.00	\$145.00
Drab Army Duck.....	122.50	150.00

Note.—Prices include fly. If no fly is wanted, deduct $33\frac{1}{3}$ per cent from list.

U. S. ARMY CONICAL WALL TENTS

Are the latest style of Army Camp Tents, being an improvement on the Sibley. The advantages of these tents lie mainly in the fact that they will house a greater number of soldiers than any of the other styles.

Complete with pole, tripod, stakes, guys, etc. Dimensions of tent are: 16 feet 5 inches diameter; 10 feet high; 3 foot wall. Tent, 12 oz. army duck with 8 oz. army duck sod cloth.

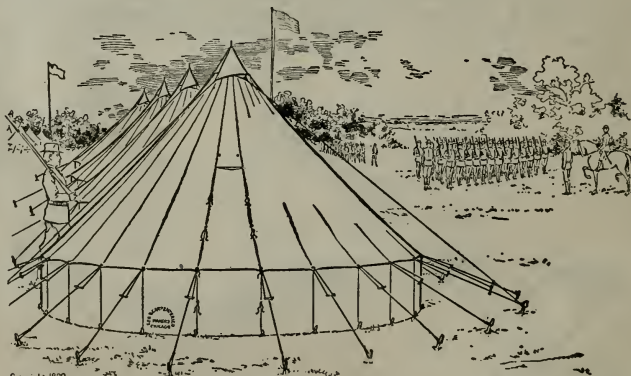
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Geo. B. Carpenter & Co.

Fig. 528B

	Machine Sewed Hand Finished	Hand Stitched and Hand Finished
White Army Duck.....	\$82.00	\$106.00
Drab Army Duck.....	90.00	112.00

We furnish for use in these Tents the regulation cone shaped stove and necessary pipe for \$5.00

WAGON COVERS

These Covers are cut with the width running the long way with shed seams and have $\frac{1}{4}$ inch draw ropes in each end. Canvas loops on sides.



Copyright 1899
Geo B Carpenter & Co

Size in Feet	250 Drill or 6 $\frac{1}{2}$ oz.	8 oz. Single Filling	10 oz. Single Filling	12 oz. Single Filling	12 oz. Double Filling	15 oz. Army	17 oz. Army
9 $\frac{1}{2}$ x 12.....	\$ 5.00	\$ 5.67	\$ 6.92	\$ 8.17	\$ 8.84	\$12.54	\$14.33
9 $\frac{1}{2}$ x 13.....	5.44	6.12	7.47	8.82	9.63	13.55	15.48
9 $\frac{1}{2}$ x 14.....	5.84	6.57	8.02	9.47	10.35	14.54	16.63
9 $\frac{1}{2}$ x 15.....	6.30	7.03	8.57	10.12	11.06	15.55	17.77
9 $\frac{1}{2}$ x 16.....	6.71	7.48	9.13	10.78	11.77	16.56	18.92
11 x 13.....	6.17	6.89	8.40	9.92	10.84	15.24	17.42
11 x 14.....	6.61	7.40	9.03	10.66	11.64	16.37	18.71
11 x 15.....	7.09	7.91	9.65	11.39	12.44	17.50	20.00
11 x 16.....	7.53	8.41	10.27	12.13	13.25	18.62	21.29
11 x 17.....	8.00	8.93	10.89	12.86	14.05	19.75	22.58
11 x 18.....	8.45	9.44	11.52	13.60	14.85	20.88	23.87
12 x 12.....	6.40	7.14	8.72	10.29	11.24	15.80	18.06
12 x 14.....	7.39	8.25	10.07	11.88	12.98	18.25	20.86
12 x 16.....	8.39	9.35	11.41	13.48	14.72	20.69	23.65
12 x 18.....	9.45	10.54	12.87	15.19	16.59	23.33	26.66
12 x 20.....	10.44	11.65	14.21	16.78	18.33	25.77	29.46
12 x 22.....	11.43	12.75	15.56	18.38	20.06	28.22	32.25
12 x 24.....	12.50	13.94	17.02	20.09	21.94	30.85	35.26

Covers other sizes than listed will be figured on same basis per square foot.

If covers are wanted fast color, tan khaki or brown, add 30% to the list, according to the weight.

BLACK RAINPROOF GROUND BLANKETS

MACHINE SEWED WITH GROMMETS IN CORNERS

3x6 feet.....each	\$1.75	5x7 feet.....each	\$4.50
5x6 feet.....each	4.00	6x7 feet.....each	5.50

Sizes not named in list prices in proportion.

PAULINS OR STACK COVERS

Complete with Eyelets and Tie Ropes

Copyright 1899
Geo. B. Carpenter & Co.

MACHINE SEWED

Size	8 oz. Single Filling Duck	10 oz. Single Filling Duck	12 oz. Single Filling	12 oz. Double Filling Duck	Size	8 oz. Single Filling Duck	10 oz. Single Filling Duck	12 oz. Single Filling	12 oz. Double Filling Duck
3-6x 3-6	\$0.70	\$ 0.85	\$ 1.00	\$ 1.10	11-8x18	\$10.55	\$12.90	\$15.20	\$16.60
4-8x 5	1.25	1.55	1.80	2.00	11-8x20	11.65	14.25	16.80	18.35
4-8x 7	1.70	2.10	2.45	2.70	11-8x22	12.75	15.60	18.40	20.10
4-8x 9	2.15	2.65	3.10	3.40	11-8x24	13.95	17.05	20.10	21.95
7 x 7	2.55	3.15	3.70	4.05	14 x14	9.90	12.05	14.25	15.55
7 x 9	3.25	3.95	4.65	5.10	14 x16	11.25	13.70	16.20	17.65
7 x10	3.60	4.35	5.15	5.65	14 x18	12.60	15.35	18.15	19.80
7 x12	4.25	5.20	6.15	6.70	14 x20	13.95	17.05	20.10	21.95
7 x14	4.95	6.05	7.10	7.75	14 x24	16.70	20.35	24.05	26.25
7 x15	5.30	6.45	7.60	8.30	14 x30-4	21.45	26.15	30.90	33.70
7 x16	5.65	6.85	8.10	8.85	16-4x16	13.10	16.00	18.90	20.60
7 x17	5.95	7.30	8.60	9.40	16-4x18	14.70	17.95	21.20	23.15
7 x18	6.30	7.70	9.10	9.90	16-4x20	16.35	19.95	23.55	25.70
9-4x12	5.70	6.95	8.20	8.95	16-4x24	19.50	23.80	28.05	30.65
9-4x13	6.15	7.50	8.85	9.65	16-4x28	22.80	27.80	32.85	35.84
9-4x14	6.60	8.05	9.50	10.35	16-4x30-4	24.85	30.30	35.80	39.05
9-4x15	7.05	8.60	10.15	11.05	18-10x20	18.60	22.70	26.80	29.25
9-4x16	7.50	9.15	10.80	11.80	18-10x24	22.25	27.15	32.05	34.95
9-4x18	8.40	10.25	12.10	13.20	19 x28	26.55	32.40	38.25	41.75
9-4x20	9.30	11.35	13.40	14.65	19 x30-4	28.90	35.30	41.65	45.50
10-6x13	6.90	8.40	9.95	10.85	19 x35	33.70	41.10	48.55	53.00
10-6x14	7.40	9.05	10.65	11.65	19 x39-8	37.75	46.10	54.40	59.40
10-6x15	7.90	9.65	11.40	12.45	21 x22	22.95	28.05	33.10	36.15
10-6x16	8.45	10.30	12.15	13.25	23-4x24	27.80	33.90	40.05	43.70
10-6x17	8.95	10.90	12.90	14.05	24 x30-4	36.40	44.40	52.45	57.25
10-6x18	9.45	11.55	13.60	14.85	24 x35	42.20	51.50	60.80	66.35
11-8x12	7.15	8.75	10.30	11.25	24 x39-8	47.60	58.10	68.60	74.90
11-8x14	8.25	10.10	11.90	13.00	24 x49	58.85	71.80	84.80	92.55
11-8x16	9.35	11.45	13.50	14.75	24 x60-8	72.80	88.85	104.90	114.50
					24 x70	83.65	102.10	120.55	131.65

We Make Special Oiled or Waterproof Covers

Write for Price per Square Foot.

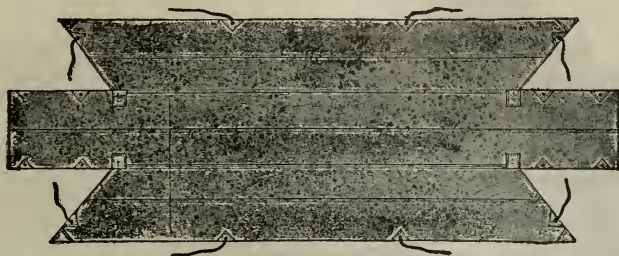
HAY-COCK COVERS

Hay-Cock Covers are especially valuable in case of sudden storms coming up while the hay is in the shock. No good farmer can afford to be without a supply of these covers.

Made with Eyelets and Ropes in each corner, to which pegs can be attached, or the rope forced into the hay by a finishing thrust of the hay fork.

Prices on application.

SEPARATOR, HARVESTER AND BINDER COVERS



"Pattern" covers are made so that they protect the machine completely when it is not in use, or when being moved from place to place. When the Separator is at work the cover fits between the wheels on the ground, making an excellent grain cloth.

In ordering, give length and width of top of separator.

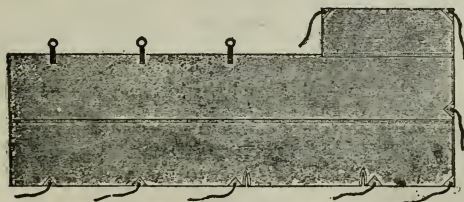
Those who prefer "spread" covers may order from our list of Paulins.

We make covers of every description, and will quote price for any special design wanted.

OUR PERFECT FIT

HARVESTER AND BINDER COVERS

Will Fit Any Machine



We can furnish promptly any of the above covers in 8, 10 or 12 oz. single or double filling duck, or with 10 oz. double filling duck sides and ends and waterproof center.

Prices on application.

STOCKMEN'S BED SHEETS

Made from One Width Best White Duck

Prices include Snaps, Rings or Eyelets, as may be ordered.

Size	11 oz.	13 oz.	15 oz.	18 oz.	20 oz.	Size	11 oz.	13 oz.	15 oz.	18 oz.	20 oz.
6 x12	\$ 5.04	\$ 6.40	\$ 7.60	\$ 8.56	\$ 9.84	7x14	\$ 7.28	\$ 8.68	\$10.26	\$11.66	\$13.34
6 x14	5.88	7.46	8.86	9.98	11.48	7x15	7.80	9.30	11.00	12.50	14.30
6 x15	6.30	8.00	9.50	10.70	12.30	7x16	8.32	9.92	11.73	13.33	15.25
6 x18	7.56	9.60	11.40	12.84	14.76	7x17	8.84	10.54	12.46	14.16	16.20
6-8x12	5.84	7.12	8.48	9.44	10.88	7x18	9.36	11.16	13.20	15.00	17.16
6-8x14	6.82	8.30	9.90	11.02	12.70	8x12	7.36	8.56	10.48	11.84	13.68
6-8x15	7.30	8.90	10.60	11.80	13.60	8x14	8.58	9.98	12.22	13.82	15.96
6-8x16	7.79	9.49	11.31	12.59	14.51	8x15	9.20	10.70	13.10	14.80	17.10
6-8x17	8.28	10.08	12.02	13.38	15.42	8x16	9.81	11.41	13.97	15.79	18.24
6-8x18	8.76	10.68	12.72	14.16	16.32	8x17	10.42	12.12	14.84	16.78	19.38
7 x12	6.24	7.44	8.80	10.00	11.44	8x18	11.04	12.84	15.72	17.76	20.52

WATERPROOF COVERS

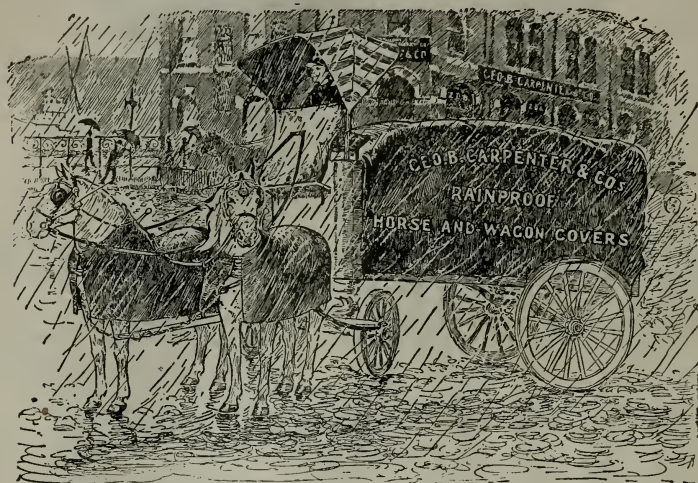


Fig. 532

FINISHED WITH PATCHES AND ROPES

We carry in stock the largest assortment in both Imported and Domestic Waterproof Flax and Ducks in the United States—embracing Belgian Flax, Paraffine, Aquepella, Textol Army, Yellow and Black, Oiled, etc.

7 x 9 feet.....	\$6.30	12x16 feet.....	\$19.20
7 x10 feet.....	7.00	12x18 feet.....	21.60
7 x12 feet.....	8.40	12x20 feet.....	24.00
7 x14 feet.....	9.80	14x16 feet.....	22.40
8 x10 feet.....	8.00	14x20 feet.....	28.00
9½x12 feet.....	11.40	16x18 feet.....	28.80
9½x14 feet.....	13.30	16x20 feet.....	32.00
9½x16 feet.....	15.20	16x22 feet.....	35.20
10 x14 feet.....	14.00	16x24 feet.....	38.40

Belgian Flax.....	List less%
No. 10 Brown Paraffine.....	"%
12 oz. Army Brown Paraffine.....	"%
10 oz. Army Brown Paraffine.....	"%
8 oz. Army Brown Paraffine.....	"%
12 oz. Army White Paraffine.....	"%
10 oz. Army White Paraffine.....	"%
8 oz. Army White Paraffine.....	"%
10 oz. U. S. Army Tan Textol.....	"%
12 oz. U. S. Army Tan Textol.....	"%
10 oz. Yellow Oiled.....	"%
10 oz. Brown Oiled.....	"%
10 oz. Black Oiled.....	"%

Write for Discount

COLUMBIA CANVAS LINED STREET BLANKETS


STREET BLANKETS

Finished with Harness Leather Breast and Tug Straps and Hame Leathers


BARN BLANKETS

Finished with Harness Leather Breast Strap and Two Surcingles Attached

STREET BLANKETS

No.	Size	Covering	Each	No.	Size	Covering	Each
1A	76x88	12 oz. Brown Paraffine	\$4.80	13B	80x96	12 oz. Brown Canvas	\$4.80
2A	84x90	12 oz. Brown Paraffine	5.20	11C	76x88	12 oz. Brown Canvas	4.00
3A	84x96	12 oz. Brown Paraffine	5.60	12C	80x90	12 oz. Brown Canvas	4.25
1B	76x88	12 oz. Brown Paraffine	4.60	13C	80x96	12 oz. Brown Canvas	4.50
2B	84x90	12 oz. Brown Paraffine	5.00	21A	80x88	11 oz. White Canvas	4.00
3B	84x96	12 oz. Brown Paraffine	5.40	22A	80x90	11 oz. White Canvas	4.50
1C	76x88	12 oz. Brown Paraffine	4.30	23A	80x96	11 oz. White Canvas	4.80
2C	84x90	12 oz. Brown Paraffine	4.80	21B	80x88	11 oz. White Canvas	3.85
3C	84x96	12 oz. Brown Paraffine	5.00	22B	80x90	11 oz. White Canvas	4.30
11A	76x88	12 oz. Brown Canvas	4.20	23B	80x96	11 oz. White Canvas	4.60
12A	80x90	12 oz. Brown Canvas	4.70	21C	80x88	11 oz. White Canvas	3.60
13A	80x96	12 oz. Brown Canvas	5.00	22C	80x90	11 oz. White Canvas	4.10
11B	76x88	12 oz. Brown Canvas	4.10	23C	80x96	11 oz. White Canvas	4.25
12B	80x90	12 oz. Brown Canvas	4.50				

BARN BLANKETS

No.	Size	Covering	Each	No.	Size	Covering	Each
51A	76x76	12 oz. Brown	\$4.00	61A	78x76	12 oz. Burlap	\$3.25
51B	76x76	12 oz. Brown	3.85	61B	78x76	12 oz. Burlap	3.10
51C	76x76	12 oz. Brown	3.70	61C	78x76	12 oz. Burlap	3.00
52A	78x76	11 oz. White	3.85	63A	78x76	10 oz. Burlap	3.15
52B	78x76	11 oz. White	3.70	63B	78x76	10 oz. Burlap	3.00
52C	78x76	11 oz. White	3.60	63C	78x76	10 oz. Burlap	2.85


WAGON APRONS
Black Oiled

No. 1. 4 feet 2 inches x 4 feet 6 inches, with pocket.....each **\$3.50**

HAME COVERS

Reaching About 9 inches in Front of the Collar and Used with any Style of Harness Adapted to Draft Horses

No. 1.	84x72 in., Black Oiled	each	\$4.00
No. 1.	84x72 in., Brown Paraffine	"	5.00
No. 1.	84x72 in., Tan Textol	"	5.00
No. 2.	78x72 in., Black Oiled	"	3.75
No. 2.	78x72 in., Brown Paraffine	"	4.75
No. 2.	78x72 in., Tan Textol	"	4.75

In ordering state if for Single or Teams.

GROUND BLANKETS

3x6 feet	With Grommets in Corners. Black Oiled	each	\$1.75
5x6 feet	"	"	2.75
5x7 feet	"	"	3.25
6x7 feet	"	"	3.75

WAGON, TRUCK, AND BUGGY UMBRELLAS

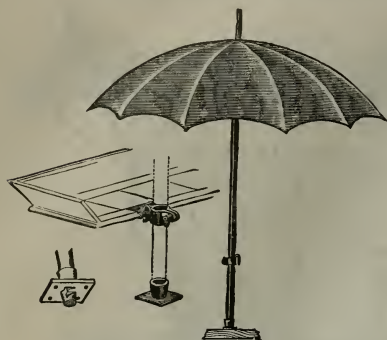


Fig. 534A

With New Seat Fixture and Socket Complete

All XXX quality have heavy one-eighth inch Steel Ribs, Hook and Ring Notcher, best Hardwood one and one half inch handle, complete with our new type Malleable Fixture.

Prices on application

Covers	Size of Frame inches
Buggy or Wagon Cloth	36
Colors: White, Blue, Buff, Green, Red, Orange.	38
	40
Heavy Drill	36
Colors: *White, *Blue, *Tan, Black, Red, Orange.	38
	40
Double-Faced Duck	36
Buff outside and Green inside	38
	40
Fancy Stripe Duck	36
Colors: *Blue and White, *Yellow and White.	38
	40

*Denotes style carried in stock. Other styles or sizes furnished on short notice.

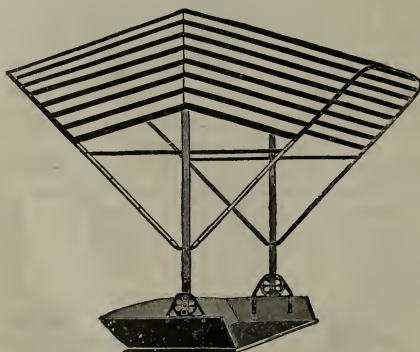
THREE BOW WAGON TOPS
FOR WAGONS, TRUCKS AND BUGGIES

Fig. 534B

With All Irons Ready to Attach to Seat

First class in every respect; neat, attractive and substantial.

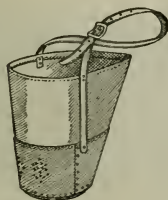
PRICES ON REGULAR SIZES

Covered with blue striped duck.....On application
Covered with plain white, blue or brown duck.....On application

Regular sizes 34, 36, 38, 40, 42, 44, and 46 inch. For larger sizes add \$0.50 to list price.

Send measure of seat from out to out on top.

FEED BAGS



Raymond

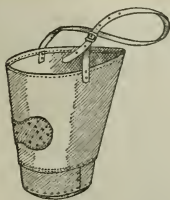


Fig. 0

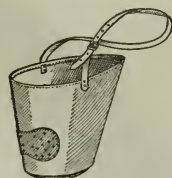


Fig. 3

RAYMOND

18 oz. duck top, heavy harness grain leather bottom, sides and straps.....per dozen \$21.00

No. 0

18 oz. duck top, split leather bottom straps and 2½ inch sides.....per dozen \$16.00

No. 3

12 oz. duck top, russet split leather bottom and black strap.....per dozen \$8.50

PIANO COVERS

8 oz. duck.....	each	\$5.00
10 oz. duck.....	"	5.60
No. 10. White, lined with Canton flannel.....	"	12.00
No. 10. Brown, lined with Canton flannel.....	"	14.00
10 oz. white, lined with Canton flannel.....	"	10.50
10 oz. brown, lined with Canton flannel.....	"	11.50

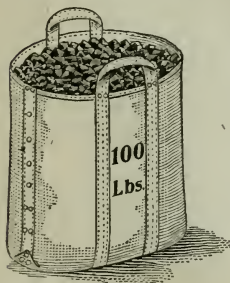
CAB CURTAINS

FINISHED WITH GROMMETS ALL AROUND—No. 6 AND No. 8 DUCK

5 feet 4 inches by 7 feet 6 inches.....	each	\$....
5 feet 1 inch by 5 feet 11 inches.....	"	....
3 feet 1 inch by 6 feet 10 inches.....	"	....
6 feet 6 inches by 7 feet 6 inches.....	"	....

COAL BAGS

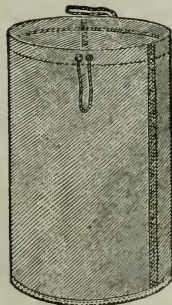
For Delivering Coal



Made of No. 4 duck, sewed and riveted with copperized rivets. per hundred. \$150.00
Same, mildew proofed, to prevent rusting.
Per hundred..... 175.00

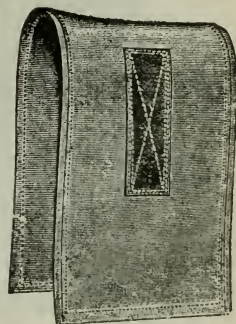
SAILOR BAGS

Navy Pattern, with Drawstring



This is the Sailor's Trunk. It will be found to be the ideal way to carry clothing to camp.
White duck.....each \$0.75
Waterproof " 1.75

HOUSINGS



Made of heavy cotton duck, finished with rawhide hame leathers all hand sewed.
No. 1. 50x19 inches.
Per pair\$6.00

SAILMAKING

AN ART



Sailmaking is very much more of an art than is ordinarily supposed, and perfection in it can only be attained by long and careful study of the various uses to which sails of different kinds are put, and also of the many fabrics and methods of cutting employed in their construction. It is a well-known fact that Duck or Sail-Cloth has threads running across it called the "filling," and others running lengthwise, over and under the filling, called the "warp," and that when strain is applied to the angle of the cloth it will stretch. The threads of the Duck which run directly across upon the square line from the selvage will stretch but little, and the difficulty which the sailmaker has to encounter is to calculate to what extent the cloths which are cut on an angle (or "gores," as they are called), will stretch when strained by the force of the wind. This is especially difficult in the modern Crosscut Racing Sails. It is necessary to know exactly how the different materials will act under strain, and also the nature and direction of the forces to which each sail will be subjected. Unless calculations and allowances are correctly made, an uneven and pressing sail will result.

An old racing skipper once said that in winning a race one-third of the credit belonged to the boat, one-third to the sails, and one-third to the man at the stick. Carpenter Sails guarantee your winning, provided you have the boat and the man.

Sailmaking is the oldest department of our business and the one in which we take the greatest pride. Our foremen are all men of long practical experience both afloat and ashore, and we employ none but the most skillful yacht sailmakers to be found in the country. Most of our materials are made especially for us and cannot be purchased elsewhere. They comprise the best the market affords, both domestic and foreign.

The best of yesterday is not good enough to-day. This is our motto, which we adhere to in every sense of the word, and our large business and facilities enable us to guarantee our patrons fair prices and prompt shipments.

An idea of the magnitude of this department of our business can be gained from the fact that we cut up, and sell annually, over two and one-half million yards of canvas. An experience of many years enables us to refer to thousands who know us and the class of work we turn out.

No order is too large for our facilities. None too small to receive our best attention.

Our Marine Department issues a special 500 page catalog of Motor Boat Hardware, Sails and Rigging, and we send it to any address on receipt of 20 cents in stamps.

MEASURING FOR SAILS

Exercise the greatest care in taking measurements.

If your boat or yacht is already sparred, send us the exact length of her masts, boom and gaffs, together with the following measurements:

The distance from bowsprit end to mast.

The distance from stem to mast.

The distance from goose neck or saddle to throat halyard block.

The distance from saddle or goose neck to deck.

The distance from throat to clew, called "diagonal."

The length of each jib stay.

Send designs, plan or blue print, if possible.

FORE AND AFT SAILS

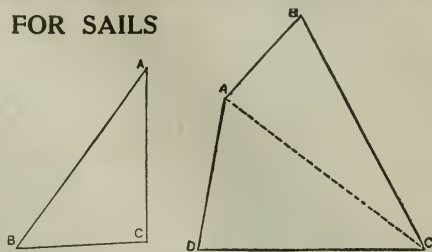
A to B.	Length of gaff.....	Feet.....	Inches
A " C.	Diagonal.....	"	"
A " D.	Length on mast.....	"	"
D " C.	" of boom.....	"	"
B " C.	" on leach.....	"	"

JIB AND STAY SAILS

A to B.	Length on stay.....	Feet.....	Inches
A " C.	" on leach.....	"	"
B " C.	" of foot.....	"	"

GAFF TOPSAILS

For gaff topsails, it is necessary to know the distance from the gaff topsail halyard block to sheave hole at end of gaff, and from same to throat halyard block; also length of gaff from center of jaws to sheave hole.



State whether you wish a working topsail or a club topsail—if the latter, state length of club and yard.

BALLOON JIBS AND SPINAKERS

Distance from bowsprit end to mast.

Distance from mast at deck to spinaker or balloon jib halyard block. * Length of spinaker pole.

SAIL COVERS

For Jibs.— State length of sail when furled and the girth at three or four points.

For Fore and Aft Sails.— State length of both boom and gaff, diameter of mast at goose neck, girth of furled sail (including spars) at mast, at gaff end and at boom end; also the exact distance from mast to each block on the gaff, and to topping-lift-band on boom, if any.



A VIEW IN OUR MAIN SAIL LOFT

FLAG POLES

CARPENTER STEEL FLAG POLES

Our Flag Poles are made of steel tubing in sections, which telescope and are fastened by cross bolts, making tight and rigid joints. The joints are furnished with iron collars to keep out the water and improve the appearance.

They are weather and lightning proof, and are especially suitable for suburban homes, schools, country clubs, yacht clubs, parks and buildings.

Our standard poles are fitted with lignum-vitae trucks, gilt ball, manila rope halyards and cleat. We can also furnish them with a ball bearing revolving halyard top if desired, at an additional price.

PRICES

40 feet, each	\$46.70
Made in 3 sections, 4 1/2 inch tubing, tapering to 2 1/4 inches.	
50 feet, each	\$60.00
Made in 3 sections, 5 inch tubing, tapering to 3 inches	
60 feet, each	\$93.50
Made in 4 sections, 6 1/2 inch tubing, tapering to 3 inches.	
70 feet, each	\$120.00
Made in 4 sections, 6 1/2 inch tubing, tapering to 3 inches.	
75 feet, each	\$167.00
Made in 5 sections, 7 1/2 inch tubing, tapering to 3 inches.	

Ornamental base shown in cut not included in the above prices. Price upon application.

IMPROVED STEEL AMALGAM BELLS

Adapted for Factories, Contractors, Schools, etc.

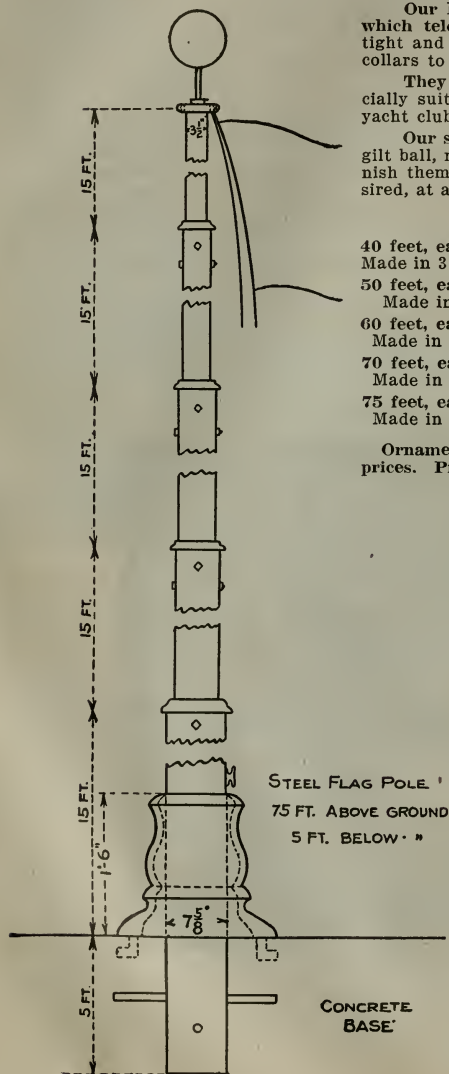


Fig. 652 Style No. 1

Steel amalgam Bell, iron frame supporting yoke from which bell is hung. Arm for attaching bell rope. All bells handsomely gilded.

Diameter inches	Approximate Weight, lbs.	Each
15	40	\$4.00
17	50	5.00
19	75	7.50
21	100	10.00

We are also prepared to furnish promptly any kind of a bell you may want. Send us your specifications for lowest prices.



FLAG POLES

Complete with Mast Head Truck, Gilt Ball, Halyard, and Cleat

Painted One Coat White Lead

IN ONE LENGTH

Length	feet	10	12	14	16	18	20	16
Dia. Square Base.....	inches	3	3	3	3	4	4	6
Dia. Round Top.....	"	1½	1½	1½	1½	2	2	2½
Est. Weight	pounds	14	18	21	24	42	48	96
Each		\$4.50	5.00	5.50	6.00	7.75	8.50	10.00

Length	feet	18	20	24	26	28	30	34
Dia. Square Base.....	inches	6	6	6	6	6	6	6
Dia. Round Top.....	"	2½	2½	2½	2½	2½	2½	2½
Est. Weight	pounds	108	120	144	156	168	180	204
Each		\$10.50	11.50	14.00	16.00	18.50	22.00	26.50

Length	feet	36	28	28	30	36	40	46	50	40
Dia. Square Base.....	inches	6	8	8	8	8	8	8	8	10
Dia. Round Top.....	"	2½	3¼	3¼	3¼	3¼	3¼	3¼	3¼	3½
Est. Weight	pounds	216	278	298	320	384	420	480	520	666
Each		\$28.50	22.50	24.50	26.50	32.50	39.50	46.00	52.00	53.00

Length	feet	44	48	50	56	60	66	70	76
Dia. Square Base.....	inches	10	10	10	10	12	12	12	12
Dia. Round Top.....	"	3½	3½	3½	3½	3¾	3¾	3¾	3¾
Est. Weight	pounds	734	800	832	932	1440	1584	1680	1824
Each		\$59.50	69.50	73.00	83.00	109.00	127.00	150.00	165.00

SCHOONER MAST IN TWO PIECES

As illustrated above.

Length	feet	50	60	70	80	90	100	125
Dia. Square Base.....	inches	8	10	10	10	12	12	12
Dia. Round Top.....	"	3¼	3½	3½	3½	3½	4	4
Est. Weight	pounds	75.00	100.00	130.00	160.00	180.00	200.00	350.00

LIGNUM-VITAE MAST-HEAD TRUCKS



Fig. 270B



Fig. 270C



Fig. 270D

Size inches	Two Holes each	One Brass Sheave and Two Holes each	Two Brass Sheaves each
3	\$0.20	\$0.45	\$0.65
3½	.22	.50	.70
4	.25	.55	.80
4½	.28	.60	.90
5	.33	.65	1.00
5½	.38	.75	1.10
6	.45	.85	1.20
6½	.75	1.25	1.60
7	1.00	1.50	2.00
8	1.50	2.00	2.50
9	2.50	3.00	3.50
10	3.50	4.00	4.50

A complete line of Marine accessories is shown in our Marine Catalog. Send for a copy.

FLAG POLE BALLS

Diam. Ball inches	Wood, Gilt with Iron Spindles	Copper with Bronze Spindles	
		Plain	Gold Leaf
2	\$0.30	....	....
2½	.40	....	....
3	.60	....	....
4	.75	\$2.25	\$3.25
5	1.15	2.50	3.75
6	1.50	2.75	4.00
7	2.50	3.50	5.25
8	3.00	4.50	6.25
10	....	6.50	9.00
12	....	9.00	12.00
14	....	10.25	15.00
16	....	13.00	17.50

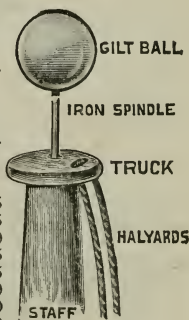


Fig. 270F

FLAG POLES AND FIXTURES

FLAG POLES

Hardwood Mahogany Finish, Complete with Halyards and M. H. Truck
For Residences, Stores, etc. Can be used with Holders shown below.

Length, feet	8	10	12	14	16
Use Ineeda Holder, diameter, inches.....	1 ¼	1 ½	1 ¾	2	2
Use Regular Holder, diameter, inches.....	1 ¼	1 ½	1 ¾	2	2
Per dozen	\$15.00	18.00	21.00	25.00	30.00
Each	1.25	1.50	1.75	2.25	2.50

FLAG STAFFS

Walnut, 9 Feet Long, Finely Polished, with Brass Ferrule

Plain	each	\$3.15
With brass spear	"	4.00
With brass eagle, 7 ½ inch	"	6.75

Either of above with brass screw joint, \$2.50 extra.

These Staffs are suitable for fine silk banners, silk company or regimental flags, etc.

INEEDA GALVANIZED IRON
FLAG BRACKET

It has fewer parts than any other Adjustable Bracket. It can be set to nearly four hundred different angles by one thumb screw. It leaves only one small casting on window sill when detached. Every Bracket has a cleat for flag halyards.

For pole, 1 ¼ inch diameter.....	each	\$0.75
For pole, 1 ½ inch diameter.....	"	1.00
For pole, 1 ¾ inch diameter.....	"	1.25
For pole, 2 inch diameter.....	"	1.50

GALVANIZED IRON FLAG STAFF HOLDERS

REGULAR



Fig. 271

There are more of these Staff Holders in use than any other. They will serve very well where an adjustable holder is not wanted.

PRICES

For pole, ½ inch diameter.....	each	\$0.10
For pole, ¾ inch diameter.....	"	.12
For pole, 1 inch diameter.....	"	.15
For pole, 1 ¼ inch diameter.....	"	.35
For pole, 1 ½ inch diameter.....	"	.45
For pole, 1 ¾ inch diameter.....	"	.50
For pole, 2 inch diameter.....	"	1.00

FLAGS

UNITED STATES FLAGS

Best Bunting

All wool double warp. Made in the best manner, from the best goods.



Universal Uniform List adopted and in effect Nov. 6, 1913.

Made of best Government Standard wool bunting, seams all double stitched; all sizes up to 8x16 feet, finished with canvas heading and grommets; 10x15 feet and larger with rope headings, 3 foot and 4 foot flags with 13 stars; all larger sizes with full complement, arranged according to the latest Government regulations, superior workmanship throughout.

Size inches	Price each	Size feet	Price each	Size feet	Price each	Size feet	Price each
15 x24	\$.080	4x 7	\$3.70	8x15	\$13.30	20x30	\$ 61.20
20 x30	.90	4x 8	4.16	8x16	14.10	20x36	72.70
Size feet	Price each	5x 8	5.00	10x18	19.40	20x40	80.60
2 x 3	\$1.36	5x 9	5.60	10x20	21.40	30x50	148.00
2½ x 4	1.80	5x10	6.10	10x22	25.50	40x60	250.00
3 x 5	2.30	6x12	8.60	12x24	30.30	50x75	400.00
3 x 6	2.70	7x14	11.10	15x30	47.30		

COMPANY BUNTING FLAGS

Company Flag, 4¼x5½ feet (new standard) . . . \$ 7.50 Company Flag, 6x6½ feet (old standard) . . . \$11.00
Same, with staff, spear, fringe, tassels and boot 18.00 Same, with Staff, spear, fringe, tassels and boot 22.00

SILK COMPANY FLAGS

With either Silk Ribbons to tie on Pole or Slip Heading to slip over Pole

U. S. National Regulation Flag, made of best quality flag silk, with gold-leaf stars, trimmed with 2-inch gold colored Silk bullion fringe, 7-inch Silk tassels and cord, imitation walnut or cherry pole with tube joint and brass spearhead, patent leather belt, and enameled cloth cover.

4¼x5½ feet . . . \$33.00
6 x6½ feet . . . 47.00

Screw Joint, \$1.35 Extra

U. S. National Regulation Flag made of best quality Flag Silk, gold-leaf stars, trimmed with 2-inch gold colored Silk bullion fringe, and Silk tassels and cord, ash pole, with screw joint, and fine 6-inch gilt eagle and enameled cloth cover.

4¼x5½ feet . . . \$40.00
6 x6½ feet . . . 54.00

Double Screw Joint, 50 Cents Extra

U. S. National Regulation Flag, made of the best quality banner Silk, sewed by machine, gold-leaf stars, trimmed with 2-inch gold colored Silk bullion fringe, 7-inch Silk tassels and cord, ash pole with double screw joint and fine 6-inch gilt eagle, patent leather belt and enameled cloth cover.

4¼x5½ feet . . . \$47.00
6 x6½ feet . . . 66.00

We furnish Stars Embroidered by Machine or Silk Sewed on at same list prices.

Flags trimmed with 2-inch gilt bullion fringe and 7-inch gilt bullion tassels with gilt cord instead of silk fringe and silk tassels, are furnished in sizes:

4¼x5½ feet . . . extra \$2.00
6 x6½ feet . . . extra 3.00

BURGEES

Made of best Wool Bunting, any colors, letters sewed on to show both sides of flag. With or without border.



Fancy lettering or designs extra. Widths given are regular, but can be varied to suit the purchaser, either wide or narrower. In ordering, specify the colors wanted, in body, border (if wanted), and letters.

Length, feet.....	5	6	8	10	12	15	18	20	21	25	30
Width at head, feet.....	2½	3	4	5	6	7½	9	10	11	12	15
Width at swallow, feet.....	1¼	1½	2	2½	3	3¾	4½	5	5½	6	7½
Plain, with 10 letters or less.....	\$5.25	\$5.50	\$7.40	\$8.30	\$11.50	\$14.75	\$18.80	\$20.75	\$25.00	\$31.75	\$45.20
With 2 stars at head, either red, white or blue, extra.....	.45	.45	.53	.53	.65	.65	1.10	1.10	1.10	1.50	1.50
With points at head, either red, white or blue, extra.....	1.20	1.20	1.95	1.95	2.60	2.60	3.00	3.00	3.00	3.75	4.50
With stars in border, either red, white or blue, extra.....	1.50	1.70	2.25	2.85	3.00	3.60	4.50	4.95	4.95	6.60	7.50
With points in border, either red, white or blue, extra.....	3.00	3.00	3.50	5.40	6.00	7.90	9.00	10.50	10.50	12.75	14.25
Price of each letter above 10 letters, extra.....	.23	.28	.35	.45	.50	.57	.66	.72	.78	.95	.95

U. S. WEATHER SIGNALS

As adopted by the U. S. Weather Signal Bureau. Made in best manner of best Bunting, with manila rope distance lines and toggles.

No. 1
White Flag

Clear or Fair Weather

No. 2
Blue Flag

Rain or Snow

No. 3
White and Blue Flag

Local Rains

No. 4
Black Triangular Flag

Temperature Signal

No. 5
White Flag with black square in center

Cold Wave

Size 3 x3 feet.....	per set of 5	\$6.00	Size 6x6 feet.....	per set of 5	\$19.00
Size 4 x4 feet.....	per set of 5	9.00	Size 8x8 feet.....	per set of 5	29.00
Size 4½x4½ feet.....	per set of 5	12.00			

STORM SIGNALS

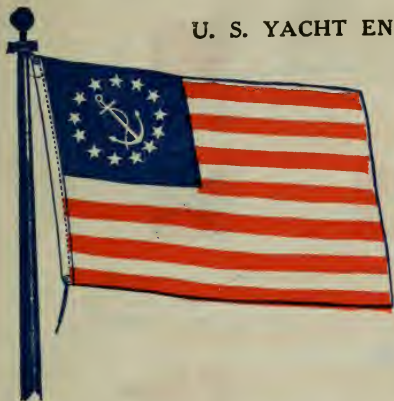
MADE IN THE SAME WAY AS THE WEATHER SIGNALS

Size 1. 1 Square Flag and 2 Pennants, 3x3 feet, per set of three	\$ 5.00
Size 2. 1 Square Flag and 2 Pennants, 4x4 feet, per set of three	6.50
Size 3. 1 Square Flag and 2 Pennants, 6x6 feet, per set of three	14.00
Size 4. 1 Square Flag and 2 Pennants, 8x8 feet, per set of three	24.00

WOOL BUNTING

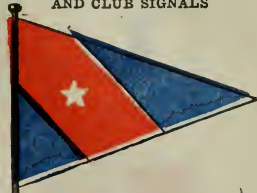
Red, white, blue, green, yellow, black. Per roll of 40 yards, Yacht, Standard, Signal, 18 inches.....

U. S. YACHT ENSIGN



Size, Feet	Each
1½ x 2	\$ 1.50
1½ x 2½	1.60
2 x 3	1.70
2½ x 4	2.20
3 x 5	2.50
4 x 6	3.50
4½ x 7	4.00
4½ x 8	5.50
5½ x 10	7.60
6 x 12	8.60
7 x 14	11.10

SPECIMEN DESIGNS OF PRIVATE AND CLUB SIGNALS



U. S. PENNANTS



Length, Feet	6	8	10	12	15	18	20	25	30	35	40	50
Width at Head, Inch	9	9	9	9	9	12	12	18	18	18	24	24
Price, Each	\$1.50	2.00	2.50	3.00	3.75	4.50	5.00	6.25	7.50	8.75	10.00	12.50

STREAMERS

Same as Pennants, Without Blue Field and Stars

Length, Feet	6	8	10	12	15	18	20	25	30	35	40	50
Width at Head, Inch	9	9	9	9	9	12	12	18	18	18	24	24
Price, Each	\$0.90	1.20	1.50	1.80	2.25	2.70	3.00	3.75	4.50	5.25	6.00	7.50



U. S. JACK

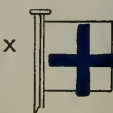
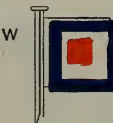
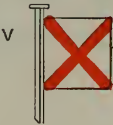
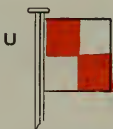
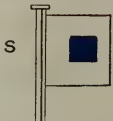
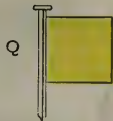
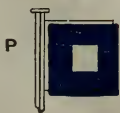
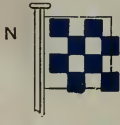
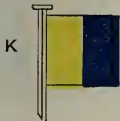
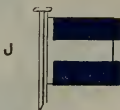
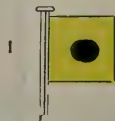


Size, Feet	Each
1½ x 2	\$ 1.40
1½ x 2½	1.70
2 x 3	1.90
3 x 4½	2.80
3¾ x 5	3.50
4½ x 6	4.50
6 x 7	5.75
7½ x 9½	10.50



This list for above or similar designs. Special for extra designs.

12x18 inches	Each	\$1.60
13x24 inches	"	1.75
20x30 inches	"	2.25
24x36 inches	"	3.00
28x42 inches	"	3.50
32x48 inches	"	4.00
40x60 inches	"	6.50



"CODE FLAG" AND
"ANSWERING PENNANT,"



INTERNATIONAL CODE OF SIGNALS

Made in best manner of U. S. standard bunting, roped and toggled, and with canvas heads, distinctly lettered. Each set in canvas bag, marked with name of ship or yacht.

Size No.	Feet	Per Set
OOO { 21 Flags . . . 1 x 1 1/2 6 Pennants. 3/4 x 3		\$21.50
OO { 21 Flags . . . 1 1/2 x 2 6 Pennants. 1 x 4		24.50
O { 21 Flags . . . 2 x 3 6 Pennants. 1 1/2 x 6		33.00
A { 21 Flags . . . 3 x 4 6 Pennants. 2 x 8		47.50
B { 21 Flags . . . 4 1/2 x 6 6 Pennants. 3 x 12		79.50
C { 21 Flags . . . 6 x 8 6 Pennants. 4 1/2 x 16		141.00

Code Book net each, \$3.00
Code Book is not subject to discount.

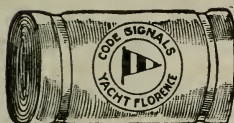
For Code Signal Bags, see page 974.



G. B. C. SIGNAL BAG

FOR CODE SIGNALS

Has a separate pocket for each Signal, and also for Code Book, Ensign and Burgee



Flag for Size	each
00	\$4.50
0	5.25
A	6.00
B	7.00
C	7.50

FOREIGN NATIONS' FLAGS

STANDARD BUNTING—NATIONAL FLAGS

The Countries having a Common Man of War Flag and Merchant Flag which are called National Flags

Nation	2x3'	2½x4'	3x5'	4x6'	4½x7'	5x8'	6x10'	8x12'	9x15'	12x20'
Belgium	\$1.00	\$1.80	\$2.75	\$3.60	\$ 4.60	\$ 5.50	\$ 7.50	\$12.00	\$16.75	\$27.50
Brazil	3.60	4.80	6.00	9.60	12.00	15.60	21.60	30.00	36.00	54.00
Burmah	3.60	4.80	6.00	9.60	12.00	15.60	21.60	30.00	36.00	54.00
Canada	3.60	4.80	6.00	9.60	12.00	15.60	21.60	30.00	36.00	54.00
Chili	1.80	2.40	3.35	4.50	5.50	6.60	9.00	14.40	19.20	30.00
Congo	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Cuba	1.80	2.40	3.35	4.50	5.50	6.60	9.00	14.40	19.20	30.00
Corea	3.60	4.80	6.00	9.60	12.00	15.60	21.60	30.00	36.00	54.00
Ecuador	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Finland	3.60	4.80	6.00	9.60	12.00	15.60	21.60	30.00	36.00	54.00
France	1.00	1.50	2.30	3.20	4.00	5.00	7.00	11.00	15.00	25.50
Great Britain	2.00	3.00	4.00	6.00	7.20	8.80	11.00	16.00	22.00	33.00
Ireland	2.00	3.00	4.00	6.00	7.20	8.80	11.00	16.00	22.00	33.00
Liberia	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Montenegro	3.60	4.80	6.00	9.60	12.00	15.60	21.60	30.00	36.00	54.00
Monaco	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Morocco	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Mosquito Indians	2.40	3.60	4.80	6.60	7.75	10.20	14.40	21.60	28.75	40.00
Netherlands	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
New Zealand	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Panama	1.80	2.40	3.35	4.50	5.50	6.60	9.00	14.40	19.20	30.00
Paraguay	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Persia	3.60	4.80	6.00	9.60	12.00	15.60	21.60	30.00	36.00	54.00
Portugal	3.60	4.80	6.00	9.60	12.00	15.60	21.60	30.00	36.00	54.00
Ratatonga	1.80	2.40	3.35	4.50	5.50	6.60	9.00	14.40	19.20	30.00
Samoa	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Scotland	3.60	4.80	6.00	9.60	12.00	15.60	21.60	30.00	36.00	54.00
Switzerland	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Transvaal	1.80	2.40	3.35	4.50	5.50	6.60	9.00	14.40	19.20	30.00
Turkey—Egypt	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Uruguay	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25

In ordering, state that National Flags are wanted.

For Merchants' Flags, see Index.

PRINTED SILK UNITED STATES FLAGS

Quantities less than half a dozen of any size will invariably be charged at piece prices.

Width - Length	Not Mounted		Mounted on Staffs with Gilt Tops		Fringed with Yellow Cut Silk Fringe	
	Per Piece	Dozen	Per Piece	Dozen	Not Mounted Per Piece	Mounted on Staffs with Gilt Tops per Piece
2x 3 inches	\$0.03	\$0.30	\$0.04	\$0.40	.....	.....
4x 6 "	.08	.80	.09	.90	\$0.22	\$0.24
5x 8 "	.11	1.10	.14	1.40	.25	.28
7x10 "	.12	1.20	.16	1.60	.28	.32
8x12 "	.15	1.60	.20	2.00	.32	.36
10x15 "	.27	2.70	.31	3.10	.50	.54
12x18 "	.31	3.10	.35	3.50	.56	.60
16x24 "	.57	5.70	.63	6.25	1.00	1.04
24x36 "	1.14	11.40	1.24	12.40	2.10	2.20
32x48 "	1.94	19.40	2.10	21.00	3.15	3.30
36x60 "	3.75	40.00	4.00	42.50	5.50	5.75
48x72 "	6.40	70.00	6.80	74.00	9.50	10.00
2x 3 "	mounted on pins		.04	.40	.....	.....
4x 6 "	mounted on pins		.11	1.10	.....	.....

For Printed Silk Flags, Foreign Nations, see page 975.

FOREIGN NATIONS' FLAGS

STANDARD BUNTING

MERCHANT FLAGS

Nation	2x3'	2½x4'	3x5'	4x6'	4½x7'	5x8'	6x10'	8x12'	9x15'	12x20'
Argentine Rep. each	\$1.00	\$1.80	\$2.75	\$3.60	\$ 4.60	\$ 5.50	\$ 7.50	\$12.00	\$16.75	\$27.50
Austro-Hungary "	3.60	4.80	6.00	9.60	12.00	15.60	21.60	30.00	36.00	54.00
Bolivia	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Bulgaria	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
China	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Colombia	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Costa Rica ...	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Denmark	1.80	2.40	3.35	4.50	5.50	6.60	9.00	14.40	19.20	30.00
Germany	1.00	1.50	2.30	3.20	4.00	5.00	7.00	11.00	15.00	25.50
Greece	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Great Britain ..	2.00	3.00	4.00	6.00	7.20	8.80	11.00	16.00	22.00	33.00
Guatemala ...	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Haiti	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Honduras	1.80	2.40	3.35	4.50	5.50	6.60	9.00	14.40	19.20	30.00
Italy	2.00	3.00	3.80	5.00	6.00	7.00	9.50	14.50	19.00	29.00
Japan	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Mexico	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Nicaragua	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Norway	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Peru	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Roumania	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Russia	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Salvador	2.20	3.25	4.20	5.70	6.60	7.80	10.25	15.60	20.40	31.25
Santo Domingo ..	1.80	2.40	3.35	4.50	5.50	6.60	9.00	14.40	19.20	30.00
Siam	2.20	3.25	4.20	6.30	7.25	9.00	12.60	18.00	24.00	36.00
Spain	1.00	1.80	2.75	3.60	4.60	5.50	7.50	12.00	16.75	27.50
Sweden	1.80	2.40	3.35	4.50	5.50	6.60	9.00	14.40	19.20	30.00
Venezuela	1.80	2.40	3.35	4.50	5.50	6.60	9.00	14.40	19.20	30.00

For National Flags, see index.

PRINTED SILK FLAGS OF FOREIGN NATIONS

Width Length Inches	Not Mounted		Mounted on Staffs with Gilt Tops		Fringed with Yellow Cut Silk Fringe	
	Per Piece	Dozen	Per Piece	Dozen	Not Mounted Per Piece	Mounted on Staffs with Gilt Tops, Per Piece
2x 3	\$0.04	\$0.40	\$0.05	\$0.50	.....	.....
4x 6	.09	.90	.10	1.00	\$0.23	\$0.25
8x12	.24	2.40	.28	2.80	.42	.46
12x18	.47	4.70	.52	5.20	.72	.76
24x36	1.70	17.00	1.80	18.00	2.65	2.75
2x 3	mounted	on pins	.05	.50	.....	.....
4x 6	mounted	on pins	.12	1.20	.....	.....

Notice: We always send the flags unmounted if the order does not state that flags are wanted mounted.

For Printed U. S. Silk Flags, see index.

U. S. COTTON FLAGS

SEWED STARS AND STRIPES

Stars Sewed on Both Sides with Canvas

Headings and Grommet

Sewed throughout in the same superior manner as our all wool bunting flags. The colors are bright and when displayed resemble silk flags very closely.

	Each
Size 2 x 3 feet, 13 stars.....	\$ 0.60
Size 2½ x 4 feet, 13 stars.....	.80
Size 3 x 5 feet, 48 stars.....	1.30
Size 4 x 6 feet, 48 stars.....	1.60
Size 4 x 7 feet, 48 stars.....	1.70
Size 4 x 8 feet, 48 stars.....	1.90
Size 5 x 8 feet, 48 stars.....	2.30
Size 5 x 10 feet, 48 stars.....	2.70
Size 6 x 9 feet, 48 stars.....	2.90
Size 6 x 10 feet, 48 stars.....	3.10
Size 6 x 12 feet, 48 stars.....	3.40
Size 8 x 12 feet, 48 stars.....	4.20
Size 8 x 15 feet, 48 stars.....	5.00
Size 9 x 14 feet, 48 stars.....	5.20
Size 9 x 18 feet, 48 stars.....	6.30
Size 10 x 15 feet, 48 stars.....	6.00
Size 10 x 16 feet, 48 stars.....	6.30
Size 10 x 18 feet, 48 stars.....	6.90
Size 10 x 20 feet, 48 stars.....	7.50
Size 12 x 18 feet, 48 stars.....	8.50
Size 12 x 20 feet, 48 stars.....	9.50
Size 12 x 22 feet, 48 stars.....	10.50
Size 13 x 24 feet, 48 stars.....	11.50
Size 13 x 25 feet, 48 stars.....	12.00
Size 15 x 25 feet, 48 stars.....	15.00
Size 20 x 30 feet, 48 stars.....	24.00
Size 20 x 36 feet, 48 stars.....	29.00
Size 4½ x 5½ feet, U. S. Regulation.....	1.70
Size 6 x 6½ feet, U. S. Regulation.....	2.30

U. S. COTTON FLAGS

LIBERTY BRAND—FAST COLOR

All except 1½ x 2 and 2x3 feet finished with canvas heads and grommets.

Size feet	Per doz.	Each
1½ x 2	\$ 1.20	\$0.10
2 x 3	2.30	.20
2½ x 4	4.50	.40
3 x 5	6.60	.55
4 x 6	10.50	.90
4 x 7	13.00	1.10
5 x 8	17.60	1.50
5 x 10	19.80	1.60
6 x 12	27.00	2.25
9 x 15	44.00	3.75

U. S. PRINTED MUSLIN FLAGS

MOUNTED ON STICKS

Full Number of Stars

Best Quality, Fast and Bright Oil Colors
Will Stand Rain

No.	Width inches	Length inches	Per Gross
1	2	x 3	\$ 0.35
2	2½	x 4	.45
3	3½	x 6	.65
4	4½	x 7½	1.00
5	6	x 9½	1.60
5½	7	x 10½	2.00
6	8	x 14	3.20
7	11	x 18	5.40
7½	12	x 22	7.00
8 A	14	x 24	8.00
8	18	x 27½	12.00
9	20	x 36	18.00
10	27	x 43	27.00
11	30	x 50	36.00
11½	36	x 56	45.00
12	40	x 66	66.00
12½	40	x 72	72.00

FLAGS OF FOREIGN NATIONS

PRINTED MUSLIN MOUNTED ON STICKS

Best Quality—Fast and Bright Oil Colors

IN SETS OF 12 DIFFERENT NATIONS

Length 10 inches.....	per set	\$0.30
Length 18 inches.....	"	.60
Length 23 inches.....	"	1.00
Length 36 inches.....	"	1.90

IN SETS OF 24 DIFFERENT NATIONS

Length 18 inches.....	per set	\$1.20
Length 23 inches.....	"	2.00
Length 36 inches.....	"	3.80

IN SETS OF 42 DIFFERENT NATIONS

Length 18 inches.....	per set	\$2.10
Length 23 inches.....	"	3.50
Length 36 inches.....	"	6.65

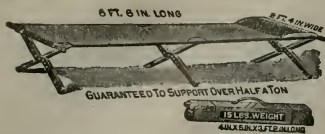


Fig. 315A. No. 1

GOLD MEDAL FOLDING CAMP BED

Covered with an extra good quality of 12 ounce brown duck. Can be furnished in same quality white duck. It is easily and quickly opened and folded, and stands firmly on the floor or adjusts itself to uneven ground when necessary. It has a duck fold which is readily converted into a pillow.

Opened: 6 feet 6 inches long, 2 feet 4 inches wide. Folded: 39 inches long, 4 inches thick, 5 inches wide. Weight: 16 pounds.

Per doz.....\$10.00 Each.....\$3.35

No. 1½ same as No. 1 except it has 12 ounce double filled duck top and leather straps.

Per doz.....\$12.00 Each.....\$3.50

No. 50. Same construction as No. 1 with exception of duck, which is 14 ounce, and bed 36 inches wide.

Per doz.....\$60.00 Each.....\$5.00

No. 9 MOSQUITO-BAR FRAME

Per doz.....\$9.00 Each.....\$0.75

No. 9N MOSQUITO NETTING

Per doz.....\$18.00 Each.....\$1.50

Can be used on No. 1 and 50 beds.



No. 2 Brown Duck Covering

GOLD MEDAL FOLDING HOUSE COT

Dimensions. Opened: 6 feet 6 inches long, 2 feet 3 inches wide. Folded: 6 feet 6 inches long, 4 inches square. Weight, 12 pounds.

Per doz.....\$28.00 Each.....\$2.35



Fig. 65 Hardwood Frame

GOLD MEDAL DOUBLE-DECK COT

Cot is 6 feet 6 inches long by 27 inches wide, covered with 12 ounce double filled brown duck with fold for pillow. Upper cot is about 40 inches from floor. When folded are 6 feet 6 inches long by about 8 inches square. Weight, about 30 pounds.

Per doz.....\$56.00 Each.....\$4.70



Fig. 315B

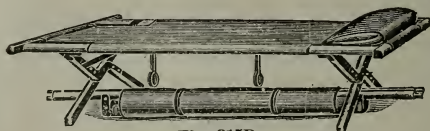
THE IMPROVED YANKEE COT

The best canvas cot on the market. Will support 1,000 lbs.; has brown duck top. 29 inches wide by 6 feet 6 inches long. Weight, 15 lbs. Folded, 32x4x6 inches.

Per doz.....\$42.00 Each.....\$3.50

"GOLD MEDAL" SHORT COTS

Each\$3.34

Fig. 315D
HOUSE COTS

No. 2 House Cot, made only 5 feet long, 27 inches wide. Weight, 14 pounds.

Each\$2.33

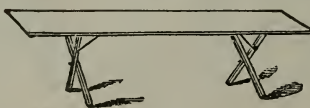
COMMON CAMP COT

Fig. 315C

Has white duck covering, it is 6 ft. 3 in. long, 2 ft. 4 inches wide; weight 17½ lbs.

Per doz.....\$24.00 Each.....\$2.00

UNITED STATES ARMY LITTER

Adopted by the Medical Department of the United States Army. The wood work all air-dried white ash, the feet malleable iron, the braces forged steel, the duck 12 ounce double filled, brown or khaki; all the iron-work is tinned.



Fig. 100

Litterper doz. \$84.00 Each...\$7.00
Slings (pair)... " 36.00 Pair... 3.00

THE CARPENTER HAMMOCK AND STAND

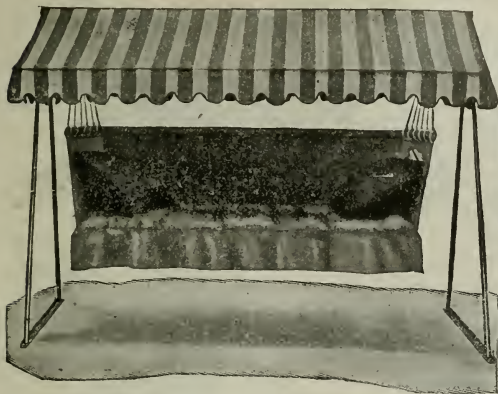


Fig. 322A

Hammock made of 12 oz. tan duck. Size of wire mattress, 28x72 inches. Mattress cotton felt covered with tan drill.

Stand and Hammock, with 2 inch mattress.....	each	\$14.25
Stand and Hammock, with 4 inch mattress.....	"	16.50
Stand and Hammock, canopy, with 2 in. mattress.....	"	20.00
Stand and Hammock, canopy, with 4 in. mattress.....	"	22.50
Hammock only with 2 inch mattress.....	"	9.75
Hammock only, with 4 inch mattress.....	"	12.00
Stand only	"	5.00
Stand with canopy.....	"	10.00



This cut shows bottom construction of wire mattress, all steel tubing frame with patent joint, making a strong and rigid frame. Rust proof.

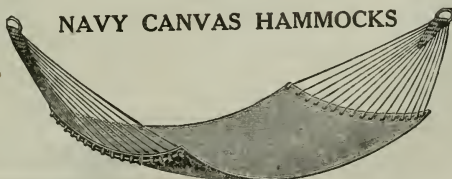


Fig. 322B

Made of No. 6 heavy brown duck, finished by practical sail-makers. Size of body, 36x80 inches. Priceeach \$4.00

ENTERPRISE TENT COT

An Ideal Bed for Sleeping on Porches. Absolute Protection from Insects.

Regular Cot is 28 inches wide by 6 feet 3 inches long, height from floor 18 inches, height from bed to canopy 32 inches; folded, 3 feet 6 inches long by 28 inches wide. Weight 30 lbs.

Double Cot is 44 inches wide same length as regular Cot. Weight 35 lbs.

Brown or white duck, open one side only.....	each	\$9.00
Brown or white duck, open both sides.....	"	9.50
Blue and white stripe, open both sides.....	"	9.50
Blue and white stripe, open one side only.....	"	9.00
Double Tent Cot, 44 inches wide, open both sides.....	"	11.00
2 inch felt pad for single Tent Cot.....	"	2.00
2 inch felt pad for double Tent Cot.....	"	2.50

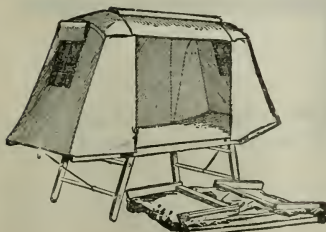


Fig. 316

**GOLD MEDAL FOLD-
ING CAMP CHAIR**



Fig. 3

This chair may be folded and carried as easy as an umbrella.

Size, folded, 3 feet long by 3 inches square. Weight, 4½ lbs.

Per doz...\$20.00 Each....\$1.70
No. 4. Same style and construction as above, but 6 inches higher so as to afford a rest for the head. Guaranteed to support 400 pounds.

Per doz...\$25.00 Each....\$2.10

**GOLD MEDAL FOLDING
CAMP STOOL**

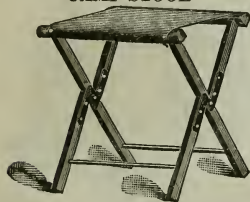


Fig. 5

Has brown duck top, hardwood frame. Is braced as shown. Will support 500 pounds. Weight, 3 lbs.

Per doz...\$6.00 Each....\$0.50

METAL FOLDING STOOL



Fig. 111S

The seat is 11 inches square, with corners cut. It is upholstered in imitation leather, black or maroon, tufted with hair.

Seat is made of three ply ½ inch veneer and will not warp or break. Finished in Japan. Folds very compact. A very handy comfortable stool, much in demand by automobiling and camping parties.

Size Seat, in. Height, in. Price, each
11x11 11 \$....

**FOLDING PORCH
CHAIR**

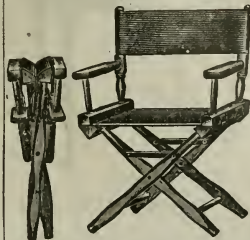


Fig. 35

No. 35. This chair can be folded in two ways as illustrated. Manufactured from selected hardwood. Very heavy No. 4 drab duck seat and back. A comfortable chair.

Per doz...\$33.00 Each....\$2.75

FOLDING EASY CHAIR



Has heavy white canvas cover and back. Is the favorite porch chair. Weight, each, 7½ lbs.

Per doz...\$36.00 Each....\$3.00

R. R. CAMP STOOL



Fig. 115

The strongest camp stool made. Carpet cover, extra heavy frame, stained dark. It is used on observation and parlor cars. Makes an ideal stool for house. Weight, 6½ lbs.

Per doz...\$12.00 Each....\$1.00

CAMP STOOL



Fig. 32

This stool when folded is 2 feet long and 2½ inches square. Weight, 2 lbs. Strong enough to support 300 pounds or more. A comfortable seat for ladies as well as gentlemen.

The seat is of heavy brown duck, reinforced and tacked at corners. Can be carried under the arm as one would carry an umbrella.

Packed two dozen to a package measuring 10x17x27 inches, weighing 46 lbs.

Price.....each \$0.34

GOLD MEDAL STOOL



Fig. 26

This is a very attractive and comfortable chair; guaranteed strong enough to support 300 pounds; folds very compactly. It is made of hardwood, has turned legs, nicely finished with filler and varnish. It is thoroughly protected with cross rivets where liable to split. Seat of fine Brussels carpet. Weight, 3½ lbs.

Per doz...\$9.00 Each....\$0.75

COMMON CAMP STOOL



Made of the best hardwood, nicely finished in the white, and the back slat is fastened with rivets instead of nails. The seat is 10 oz. duck.

No. 28. Without back. Price.....each \$0.35

Packed for shipment in package 13x20x25 inches, weight 39 lbs.



No. 7 GOLD MEDAL FOLDING CAMP TABLE

This table is all made of hard wood, with top 2 feet 3 inches wide and 3 feet long, and is finished with filler and varnish. In use it is very strong and rigid, and is guaranteed to support 300 pounds. Size, folded, 3 feet long by 5x7 inches. Weight, 16 pounds.

Per dozen	\$40.00
Each	\$3.35
No. 8. Folding Shelf, to use with table.	
Per dozen	\$8.00
Each .....	.75



Fig. 301



Fig. 311

PEERLESS FOLDING TABLES

An ideal table for house, porch or camp. Will support 1,000 pounds. Is an attractive table in appearance and finish. Legs fold under table top.

No. 301. Weathered oak finish. 30 inch diameter. Weight, 16 lbs.

No. 311. Weathered oak finish. 30x30 inches. Weight, 16 lbs.

Per dozen\$54.00; each.....\$4.50



Fig. 6

This chair is braced; will support 500 pounds. Folds into small space. A comfortable chair for any use. Weight, 4½ lbs.

Per dozen	\$9.00
Each .....	.75



Fig. 25

A very attractive and comfortable chair, guaranteed strong enough to support 300 pounds, folds compactly. Made of hardwood, thoroughly protected with cross rivets. Seat of fine brussels carpet. Weight, 4 lbs.

Per dozen	\$10.80
Each .....	.90



Fig. 10

This chair has a seat of good brussels carpet, frame is all made of hardwood, birch or rock elm, nicely finished with filler and varnish. Weight, each, 5 lbs.

Per dozen	\$13.80
Each	1.15



Fig. 200

One of the best folding wood chairs on the market. Handsome in appearance, strong and durable. Very desirable for those having little space for storing. Weight, 9¼ lbs.

Per dozen	\$12.75
Each	1.10



Fig. 27

Has striped duck seat, hardwood frame and back. Is a comfortable chair. Weight, 4½ lbs.

Per dozen	\$5.40
Each .....	.47

A FULL LINE OF WICKER DECK FURNITURE IS SHOWN IN OUR MARINE CATALOG

PATENT CAMP STOVES

These Stoves are Made from No. 20-Gauge Sheet and Fully Warranted

They are indestructible. These stoves cost only about one quarter as much as a cast iron stove, and will do the work much quicker and better. They will not break or bend. They are light and easy to handle. You can cook, bake, roast, broil and heat, no matter what condition of weather. Biscuits can be baked with one of these in 15 minutes. They burn anything except coal.

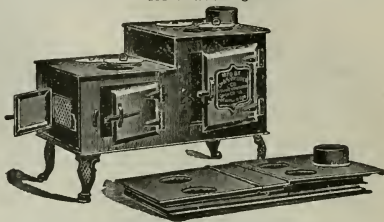
THE SPORTSMAN'S FRIEND

The Sportsman's Friend is a folding stove fitted together with such exactness that it takes only a minute to take it apart and prepare it for traveling, while it can be put together ready for use in the same length of time. The stove is large enough to supply all the cooking necessary for a party of fifteen people.

It is packed in a neat pine box, 4 inches high, 32 inches long, and 17 inches wide. This stove is 29 inches high, 17 inches wide, 16 inches back of oven, and 10 inches high at fire place, when standing on legs ready for use; total height, 23 inches. The oven is 10x10 inches square and 17 inches deep.

Full instructions with each stove in regard to putting them together. Weight of stove, 42 lbs.; crated, 60 lbs. Each\$16.50

Cut Showing it Ready for Use and Folded Ready for Traveling

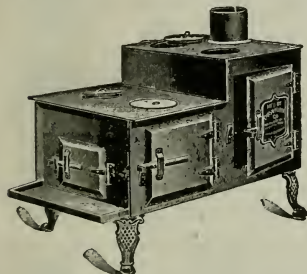


THE SPORTSMAN'S DELIGHT

The size of this stove is 29 inches long, 17 inches wide, 16 inches high back of the oven, and 11 inches high in the fireplace. These dimensions do not include height of legs. The legs are 7 inches long, making the stove in all 23 inches high when in use.

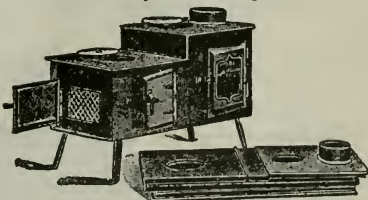
The pipe hole is for 5-inch pipe, and the cooking holes are 5 inch. The oven is 10 inches wide, 11 inches high, and 17 inches deep.

Every cooking hole on top of stove is protected with a cast iron ring $\frac{1}{2}$ -inch thick by $1\frac{1}{2}$ inches wide, riveted firmly on inside of each hole. There is also a damper attachment which regulates the heat by three movements. The legs are detachable and can be packed inside of stove, and at the same time all the cooking utensils can be put inside the stove. Weight of stove, 50 lbs.; crated 70 lbs. Each, \$13.50



THE "LITTLE PET"

Cut Showing Stove Ready for Use and Folded Ready for Traveling



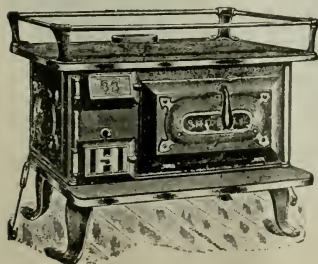
The "Little Pet" is small, easily supplies the desires and wants of small camping parties, such as individual hunters or small families. These stoves are manufactured in two ways, one of which can be folded as shown in cut, and one which does not fold, but can be carried as conveniently as a valise.

This stove occupies a space 23 inches in length, 12 inches high and 12 inches wide. The oven is 8x8 inches square by 12 inches deep. The stove is 18 inches high when standing on its legs, is packed in a box ready for use. The box is 4 inches high, 27 inches long and 14 inches wide. This stove has two cooking holes, each 5 inches, and a pipe hole for a 5-inch standard pipe. Weight of stove, 25 lbs.; crated, 35 lbs.

Folding stove, each\$13.50

Non-folding stove, each 10.00

Pipe (telescopic), 6 lengths 15 inches long 1.75



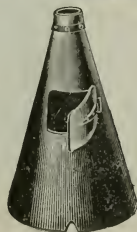
SHIPMATE RANGES

For Coal or Wood

We show in our Marine Catalog a complete line of stoves and ranges for camping and marine use. We are agents for the Shipmate ranges and can furnish promptly any of the various numbers made by that company.

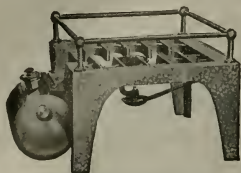
SIBLEY HEATING STOVES

The only stove to use for heating. Has no bottom. Burns everything. 18 inches diameter at base; 4 inches diameter at top. Height, 28 inches. Including 9 foot pipe, each....\$5.00



G. B. C. KEROSENE RANGE

Single and Double Burner



A very serviceable and compact range for marine use. The framework is of galvanized iron. The tank is of polished brass.

The tank burns common kerosene as a fuel, which is fed to the burner under pressure. The design of the burner is very simple and contains no brass gauze in the burner head to fill up and clog the burner. The flame can be regulated by the small valve on top of the filler cap of the tank.

To operate, heat the burner by priming with alcohol. When the alcohol is nearly consumed give the pump a few strokes and the kerosene vaporizes, and the stove will burn properly, after which additional pumping will heighten the flame to suit requirements.

The tank holds one quart, which will operate to the average of from 14 to 16 hours. One quart of water at 15° can be brought to boil in three or four minutes.

Single Burner

Stock No.	Length Over All inches	Width Over All inches	Height to Top of Rail inches	Inside of Rail inches
M501FF	13 1/4	10 1/2	7 1/2	9 1/4 x 8 3/4

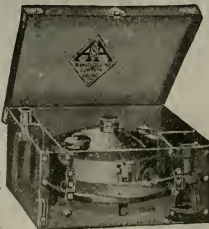
Double Burner

Stock No.	Length Over All inches	Width Over All inches	Height to Top of Rail inches	Inside of Rail inches
M401FF	23 1/2	10 3/4	7 3/4	18 x 9 1/2

THE OPTIMUS PORTABLE
CAMP STOVE

The stove is identical with the one shown opposite. It is, however, constructed in a more convenient form for carrying. Case is made of metal. It contains the stove and a bottle for alcohol.

These Optimus stoves burn equally well in indoor or in exposed places. There is no wind that will blow them out. Easy to keep clean as there is no wick of any kind.



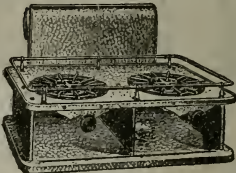
Stock No.
M 701 FF

Weight, lbs.
5

DOUBLE BURNER
UNIVERSAL ALCOHOL STOVE

This double burner stove is constructed along the lines of the single burner and operates in the same manner.

It is large enough to accommodate a bake oven as well as all ordinary cooking utensils. The tank is large, holds two quarts, to avoid frequent refilling. Thoroughly reliable, nothing to get out of order. Made of galvanized steel with dull nickel grate and brass tank and rail. Weighs packed in wood box, 30 lbs.



Stock No.	Length inches	Depth inches	Height Over All inches
M 201 FF	22	17	13 1/4

UNIVERSAL ALCOHOL STOVE

This stove converts denatured alcohol into gas and burns with an intensely hot blue flame. Simple to operate, regulates like an ordinary gas range. Boils one quart of water at 50° F. in seven minutes. Accommodates all ordinary cooking utensils. Clean, odorless and absolutely safe. Body of burner enclosed to protect it from wind when used in exposed places.

Body of stove, galvanized steel; grate, dull nickel; rail and reservoir, polished brass. Diameter of grate is 10 3/4 inches; weighs packed in wood box, 11 lbs.



Stock No.	Height to Top of Rail inches	Extreme Height inches
M 301 FF	5	10 3/4

Single Burner

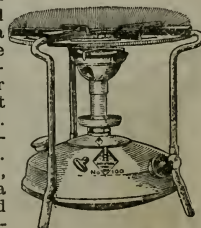
Three Burner

Stock No.	Length inches	Depth inches	Height Over All inches
M 101 FF	29 3/4	19	12 3/4

THE OPTIMUS STOVE

Burns kerosene, is absolutely safe, clean and odorless. Will boil a quart of water in three minutes. When burning at its highest power it will consume one quart of kerosene in six hours. Flame regulated by turning of a thumb screw. Tank is of polished brass, holds one quart, and a combination silent and roaring burner is furnished.

Stock No.
M 601 FF



Weight, lbs.
3

"UNIVERSAL" VACUUM BOTTLES AND LUNCH SETS

Sanitary.

Durable.

Equipped with steel spring shock absorber.

No paper or felt pads used in construction of these bottles.



Black Enameled Case.
Tinned Steel Cap.

- No. 61. Pint\$1.25
No. 62. Quart 2.00

Extra Fillers.

- No. 00. ½ Pint\$0.90
No. 01. Pint 1.00



Black Enameled Case.
Nickered Shoulder and Cap.

- No. 70. ½ Pint\$1.50
No. 71. Pint 1.75
No. 72. Quart 2.75



Full Nickel.

- No. 80. ½ Pint\$2.25
No. 81. Pint 2.50
No. 82. Quart 3.75



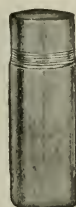
Leather Covered.

Pints

- No. 871. Black Levant ...\$3.50
No. 881. Tan Hide 3.50
No. 891. Genuine Pig Skin 3.50

Quarts

- No. 872. Black Levant ...\$5.00
No. 882. Tan Hide 5.00
No. 892. Genuine Pig Skin 5.00



Food Jar

Full Nickel.

- No. 800. ½ Pt. Butter Jar.\$2.50
No. 811. Pint 3.00
No. 812. Quart 4.00

Extra Fillers.

- No. 010. ½ Pint\$1.15
No. 011. Pint 1.25
No. 012. Quart 2.00

THE "UNIVERSAL" LUNCH KIT



With Vacuum Bottle, Drinking Cup and
Aluminum Trays

- No. 20. Tan, brass trimmings.....\$2.75
No. 320. Black, nickered trimmings..... 2.75
No. 01. Extra filler for "Universal"
Lunch Kits 1.00

CARAFE CARRIER

Full Nickel Plated Case, Covering Glass
Filler Completely



Carafe

- No. 39\$3.50
Carrier and
Glasses
(No Bottle)

- No.
391822 ...\$9.00
Complete with
1822 Bottle

- No. 1822...\$5.50
Bottle Only.
Quart with Metal
and Cork Stopper

- No. 0122...\$3.50
Extra Filler.
Quart

Guaranteed to keep liquids hot 24 hours, cold 72 hours

CANVAS BUCKET

Hand Sewed

A canvas bucket is preferable to any other type on board a boat inasmuch as it will not mar the sides as is the case with the wood and iron bucket.



Stock No.	Depth, inches.	Diam., inches.
M 1512 B	12	9

DUPLEX FOLDING PAIL



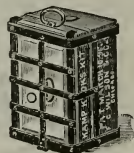
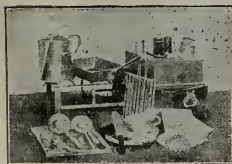
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Open

No. 5 has splash guard strainer and spout. All have wire handles and japanned mountings.

Stock No.	Capacity in Quarts.	Diameter, inches.	Depth, inches.
M 1501 B	6	10	7½
M 1502 B	8	10	7½
M 1503 B	10	11	9½
M 1504 B	10	11	9½

KAMP KOOK'S KIT



In Shipping Order.
Size 14½x10½x8 inches

Regular Size for Six Persons

Kit consists of fire jack, dish pan, boiler, frying pan, coffee pot, cover, adjustable handle, broiler, two ladles, cake turner, basting spoon, fork, can opener, pot cleaner, towel, match box, flour dredge, salt and pepper boxes, candle lantern.

Table ware consists of six each, knives, forks, tea spoons, tin cups, tin plates, two table spoons, one butcher knife.

Stock No.	Description.	Weight, in pounds.
M 113 C	Kamp Kook's Kit, 21 pieces	15
M 114 C	Reg. Table Ware, 33 pieces	5
M 115 C	Reg. Kit & Table Ware, 54 pieces	20

Squad Size for Twelve Persons

Stock No.	Description.	Weight, in lbs.
M 116 C	Kamp Kit, 28 pieces	60
M 117 C	Table Ware, 64 pieces	10
M 118 C	Kamp Kit & Table Ware, 92 pieces	70

A MORE COMPLETE SHOWING OF THESE GOODS CAN BE FOUND IN OUR MARINE CATALOG

BONE HANDLED YACHT-MAN'S KNIFE



With one blade and marlin spike with shackle for lanyard. Imported tool steel. Bone handle.

Stock No.—M 275 V

DUPLEX FOLDING BASIN



Folded

Open

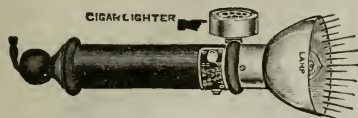
Duplex Basins are made of waterproof canvas sides and pantasote bottom. Japanned mountings.

Stock No.	Diameter, inches.	Depth, inches.
M 1505 B	12	5½
M 1506 B	14	7½
M 1507 B	16	9½

HAWKEYE REFRIGERATOR BASKET



Stock No.	Length, inches.	Width, inches.	Depth, inches.
M 110 C	13	10	7½
M 111 C	18	12	8½
M 112 C	20	13	10

"PRESTO" CIGAR LIGHTERS

No. 200 Combination "Presto" Cigar Lighter and Lamp



No. 202 "Presto" Cigar Lighter with Holder



No. 205 "Presto Star" Cigar Lighter

COMBINATION "PRESTO" CIGAR LIGHTERS AND LAMPS

New design, handle of ebony finish, nickel plated cigar lighter tip and reflector. Polished ivory finish push buttons. Furnished with 10 feet of silk cord.

No. 200. Complete with regular terminals, each\$3.50

"PRESTO" CIGAR LIGHTERS

Furnished with 10 feet of silk cord

No. 202. Complete with regular terminals and pure platinum tip.....each \$2.50

"PRESTO" DE LUXE CIGAR LIGHTER

No. 203. Complete with 6 feet black silk cord, ebony finish handle pearl push button, interchangeable tip and bulb and nickel plated holdereach \$4.50

"PRESTO STAR" CIGAR LIGHTERS

Designed to get their power direct from magneto on any standard 6 V. system. Equipped with 10 feet silk cord. Made with wood handle ebony finish, heavy nickel plated trimmings.

No. 205. Complete with holder.....each \$2.50

No. 206. Extra Platinum Tip, 6 V..... " 1.00

AUTOMATIC CORD WINDER

This winds up the cord automatically and can be placed under the seat or at the side of car, or behind the dash; can be used to wind up the cord on any "Presto" cigar lighter or inspection lamp.

No. 240. Automatic Cord Winder (only).....each \$2.50

No. 250. Automatic Cord Winder with Combination "Presto" No. 200, complete with holdereach 6.00

No. 252. Automatic Cord Winder, with cigar lighter No. 202, and holder.....each 5.00

For any other combinations of cigar lighters and winder add prices of both articles together.

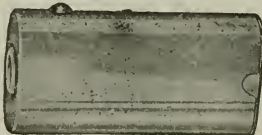
A nickel plated holder is furnished with each cigar lighter, which can be attached anywhere in the car.

FLASH LIGHTS

Style of No. 12, 22 and 23 with Vulcanized Fibre Cases



Style of No. M22 and M23 with Vulcanized Fibre Cases



Style of No. 72, 42 and 43 with Nickel Plated Cases

The flash lights made with vulcanized fiber cases have nickel plate trimmings. The cases on the oblong flash lights are entirely nickel plated.

The batteries are of the best quality. As they are used for intermittent service, it is impossible to state the exact length of time they will last. The average continuous life of the battery is fourteen hours, but for intermittent service the life of the battery is increased to 100 per cent. We guarantee them equal to any flash lights on the market, and should you find any battery that is not up to standard it will be promptly replaced without charge.

No. 12, Vulcanized Fibre—Size 1½x5 Inches

Case complete, with battery and lamp.....\$1.00

No. 121 battery, 1x3¾ inches..... .30

G-3½, 2.8 v. Mazda lamp, No. 1210..... .13

No. 22, Vulcanized Fibre—Size 1½x6½ Inches

Case complete, with battery and lamp.....\$1.20

No. 221 battery, 1¾x4½ inches..... .30

G-4½, 2.9 v. Mazda lamp, No. 2210..... .13

No. 23, Vulcanized Fibre—Size 1½x8½ Inches

Case complete, with battery and lamp.....\$1.40

No. 231 battery, 1¾x7 inches..... .40

G-4½, 3.8 v. Mazda lamp, No. 2310..... .13

No. M22, Vulcanized Fibre Miner's Head—Size 1½x6½ Inches

Case complete with battery and lamp.....\$1.50

No. 221 battery, 1¾x4½ inches..... .30

G-4½, 2.9 v. Mazda lamp, No. 2210..... .13

No. M23, Vulcanized Fibre, Miner's Head—Size 1½x8½ Inches

Case complete, with battery and lamp.....\$1.70

No. 231 battery, 1¾x7 inches..... .40

G-4½, 3.8 v. Mazda lamp, No. 2310..... .13

No. 72, Nickel Plated—Size 2½x1¼x1½ Inches

Case complete, with battery and lamp.....\$0.75

No. 721 battery, 2x1¼x¾ inches..... .30

FE-3½, 2.8 v. Mazda lamp, No. 4210..... .13

No. 42, Nickel Plated—Size 2¾x1¾x¾ Inches

Case complete, with battery and lamp.....\$0.75

No. 421 battery, 2¾x1¼x¾ inches..... .30

FE-3½, 2.8 v. Opal Mazda lamp, No. 4210..... .13

No. 43, Nickel Plated—Size 2¾x2¾x¾ Inches

Case complete, with battery and lamp.....\$1.00

No. 431 battery, 2¾x2¾x¾ inches..... .40

FE-3½, 3.8 v. Opal Mazda lamp, No. 4310..... .13

Marine Department

OUR Marine Supply Department, in point of age, represents the corner stone of our business. We have always catered to the "men who go down to the sea in ships," and the best smell we know is—TAR.

The following pages show only a few items in our very extensive stock of Marine Hardware. The marine supply line is so varied and distinctive that we have thought best to cover it with a separate catalog. We therefore urge all those who are interested in boating, or boat building to

Send for our Marine Supply Catalog

It is free for the asking to all holders of this, our General Catalog No. 110.

We take this opportunity of stating that we also issue separate catalogs covering tents and camp equipment, awning hardware, mechanical rubber goods, as well as innumerable pamphlets and circulars covering other lines.

GEO. B. CARPENTER & CO.

OAR LOCKS

GALVANIZED IRON AND BRASS

We do not recommend Cast Iron Rowlocks. All Rowlocks are listed per pair.

Fig. 105
Standard SocketFig. 110
Ribbed SocketFig. 103
Round SocketFig. 102
North River Socket

STANDARD SOCKET ROWLOCKS

Size	Width Between Horns, inches	Malleable	Polished Brass
No. 0	1 3/4	\$0.30	\$1.25
No. 1	2	.35	1.40
No. 1 1/2	2 1/8	.45	1.60
No. 2	2 1/4	.50	2.00
No. 3	2 1/2	.65	2.60
No. 4	3	.90	3.25

RIBBED SOCKET ROWLOCKS

GALVANIZED IRON AND BRASS

Size	Width Between Horns, inches	Malleable
No. 0	1 3/4	\$0.25
No. 1	2	.30
No. 2	2 1/4	.40
No. 3	2 5/8	.60
No. 4	3	.80

ROUND ROWLOCKS—Side Plate

Size	Diameter of Hole in the Clear, inches	Malleable Iron	Polished Brass
No. 0	2	\$0.45	\$1.65
No. 1	2 1/4	.50	1.75
No. 2	2 1/2	.60	2.25

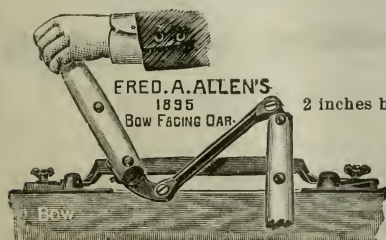
Socket

Size	Width Between Horns, inches	Malleable Iron	Polished Brass
No. 0	2	\$0.35	\$1.40
No. 1	2 1/4	.40	1.50
No. 2	2 1/2	.50	2.00

NORTH RIVER ROWLOCKS

GALVANIZED IRON AND BRASS

All Rowlocks Are Listed Per Pair

FRED. A. ALLEN'S
1895
Bow Facing Oar.

	Socket	Malleable Iron	Polished Brass
2 inches between horns.....		\$0.40	\$1.75

ALLEN'S BOW-FACING OARS

Rowing Gear, with copper tipped spruce blades, complete, 7 or 8 feet, and ready to screw on gunwale per set,

Rowing Gear Irons (without blades).....

Extra Spruce Oars.....per foot

Pocket Oil Cans.....each

In ordering mention beam of boat.

A COMPLETE LINE OF ROWLOCKS IS SHOWN IN OUR MARINE CATALOG. SEND FOR A COPY.

ASH BOAT OARS

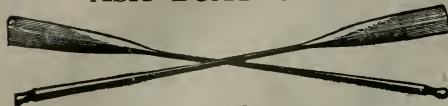


Fig. 148A

With Plain Tip

Made of straight grained stock in the following lengths:

Length, feet	Length, feet	Length, feet
6	9	14
6 ½	10	15
7	11	16
7 ½	12	18
8	13	

With Copper Tips

Similar to our plain ash oars, but with copper tips on all sizes to 10 ft. inclusive and copper bands on longer lengths.

Length, feet	Length, feet	Length, feet
6	9	14
6 ½	10	15
7	11	16
7 ½	12	18
8	13	

OAR LEATHERS

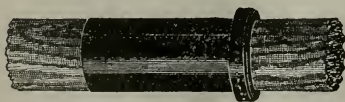


Fig. 148D

Come put up in envelopes containing 1 set of leathers with collars (for 1 pair of oars) with necessary nails. The 6x6 inch leathers are for oars up to 8 feet. 6x7 inch leathers are for larger oars up to 10 feet.

Inches
6x6

Inches
6x7

SINGLE CANOE PADDLES



Fig. 149A

Spruce

Made of selected eastern spruce, hand finished and varnished with either plain or copper tip in the following lengths: 4, 4 ½, 5, 5 ½ and 6 feet.

Maple

Made of selected hard maple, hand finished and varnished. While heavier than spruce it is tougher. Plain tip. Lengths: 4, 4 ½, 5, 5 ½ and 6 feet.

SPRUCE BOAT OARS

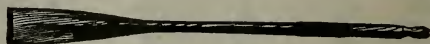


Fig. 148B

Plain with Copper Tips

Made of selected Eastern spruce, very light.

Length, feet	Length, feet	Length, feet	Length, feet
6	7	8	10
6 ½	7 ½	9	

Leathered and Varnished with Copper Tips

Similar to our plain spruce oar, finished with good spar varnish and leather.

Length, feet	Length, feet	Length, feet	Length, feet
6	7	8	10
6 ½	7 ½	9	

SPOON OARS



Fig. 148C

Selected Eastern spruce leathered and varnished, furnished with taper handles.

Length, feet	Length, feet	Length, feet	Length, feet
6	7	8	10
6 ½	7 ½	9	

PUSH PADDLES



Fig. 149B

Ash

Straight grained ash in the following lengths: 9, 10 and 12 feet.

Spruce

Selected eastern spruce, plain tip in the following lengths: 9, 10 and 12 feet.



MARINE GLASSES

With Sole Leather Case and Strap

These glasses are our own importation direct from the celebrated factories of Colmont and Lemaire.

Colmont Marine Glasses while moderate in price are of superior finish and have excellent optical qualities.

The line of Jemalre Marine Glasses ranks as the best that can be produced abroad.

ANEROID BAROMETERS

Our line of Aneroid Barometers consists of both German and French made. The PHILIP brand of barometers are imported by us direct from the famous French makers, who have a reputation of turning out the finest instruments manufactured. The unbranded instruments are of German manufacture, not of as high a grade as the "French" make, but very accurate and serviceable instruments for the money. Both types can be set for altitude by turning a small set screw in a recess in the back of the instrument.



	Stock No.		screw in a recess in the back of the instrument. Stock Diam. of Face		Description <small>Dial diam. inches</small>
Lignes	21	24	26	Make Colmont	Description
M101V M111V					Black morocco covered body, metal parts finished in bronze. Good quality. Achromatic lenses, sunshades to draw over objective lenses.
M102V M112V				Colmont	Black morocco covered body, metal parts black japan.
M103V M113V				Colmont	Black morocco covered body, japan mountings, oxidized cross-bars, adjustable to pupillary distance, 10 lenses.
M104V M114V				Lemaire	Black morocco covered body, metal parts finished in japan, high tops.
M105V M115V				Lemaire	Black morocco covered body, japan mountings, with sunshades, double draw extension.
M116V Lemaire					Black morocco covered body, japan mountings, high model, Grand power. This is the most powerful glass made in power, breadth of field of vision and clear definition.
M158V					" Closed face, with card dial, in brass case.
M159V					" Open face, with card dial, in brass case.
M160V				F ^H B	N brand, closed face, with " card dial, in brass case.
M161V				" "	brand, open face, with " card dial, in brass case.
M162V				" "	closed face, with metal " dial, in brass case.
M163V				" "	" open face, with metal " dial, in brass case.
M164V				" "	" open face, with metal " dial, in brass case and one thermometer attached.
M165V				6½"	" open face, with metal " dial, in brass case and two thermometers attached, showing Fahrenheit, Centigrade, and Reamer scales.

CHELSEA CLOCKS

Marine

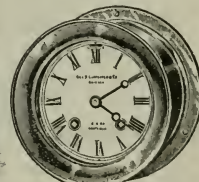
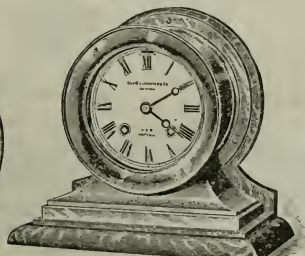


Fig. 618A Time Clock

Fig. 618B Showing Base

Fig. 618C Striking Ship Bell

Cases are solid brass, highly polished. Bases are polished mahogany and cast brass, finished same as clocks. The finest clocks made, perfect timekeepers and beautiful ornaments to an engine room, yacht or residence.

EIGHT DAY MOVEMENTS

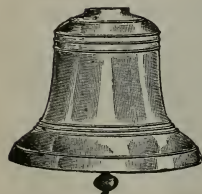
Size Face inches	Time Clock		Striking Ship's Bell Clock		Extra for Base
	Screw Bezel	Hinged Bezel with Lock and Key	Screw Bezel	Hinged Bezel with Lock and Key	
4½	\$21.00	\$24.00	\$12.00	\$15.00	\$ 9.00
6	23.00	26.00	47.00	50.00	12.00
8½	.....	33.00	.....	55.00	17.00
10	.....	42.00	.....	60.00	27.00

TRIP GONG

Polished Bell Metal



Diameter inches	Diameter inches	Diameter inches	Diameter inches
3	6	10	16
4	7	12	18
5	8	14	

HEAVY SHIP'S
BELL WITH BOLT
AND NUT

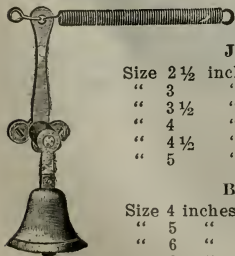
Genuine Bell Metal

Stock No. Bright	Weight in lbs.	Diameter inches
M 1101 B	13	8 1/2
M 1103 B	20	10 1/2
M 1105 B	30	12
M 1107 B	40	13
M 1108 B	50	14
M 1109 B	60	15
M 1110 B	70	16
M 1111 B	80	17
M 1112 B	100	17 1/2

JINGLE BELLS

Polished Brass Bells, Rolled Brass Carriages

The clappers are suspended from a heavy brass loop cast into the bell.



Jingle Bells

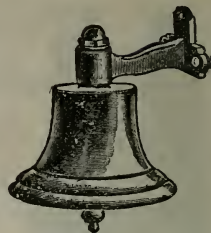
Size	2 1/2 inches	each	\$1.00
" 3	"	"	1.25
" 3 1/2	"	"	1.50
" 4	"	"	2.00
" 4 1/2	"	"	2.25
" 5	"	"	2.50

Bell Springs

Size	4 inches	per doz.	\$1.00
" 5	"	"	1.25
" 6	"	"	2.00
" 8	"	"	4.00
" 10	"	"	5.00

HEAVY
YACHT BELL
WITH
STATIONARY
BRACKET

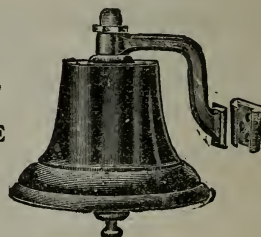
Bell Metal



Stock No. Polished	Opening inches	Stock No. Polished	Opening inches
M 1305 B	6	M 1311 B	10
M 1307 B	8	M 1313 B	11
M 1309 B	9		

HEAVY
YACHT BELL
WITH
DETACHABLE
BRACKET

Bell Metal



Stock No. Polished	Diam. of Opening inches	Stock No. Polished	Diam. of Opening inches
M 1306 B	6	M 1312 B	10
M 1308 B	8	M 1314 B	11
M 1310 B	9		

BELL CRANKS



Side or Flat



End or Upright

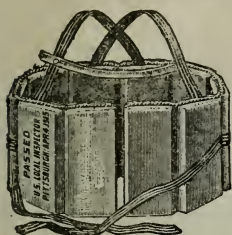
Size	Length of Crank, inches	Side or Flat each	End or Upright each
No. 1	3	\$0.40	\$0.50
No. 2	3 3/4	.50	.60
No. 3	4 1/2	.60	.75

BRASS BELL PULLS



Size	Length Pull, inches	Polished Brass, each
No. 1	2	\$0.50
No. 2	2 1/2	.60
No. 3	3 1/4	.75
No. 4	3 Heavy	1.00
No. 5	2 1/2 Extra Heavy	2.00

A MORE COMPLETE OFFERING OF BELLS IS SHOWN IN OUR MARINE CATALOG



BLOCK CORK LIFE PRESERVER

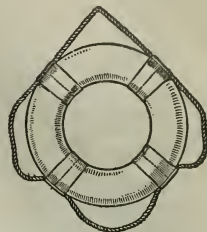
Every preserver has the U. S. inspector's stamp made of good canvas and solid cork blocks with shoulder straps.

Stock No.
M 2002 B Block Cork
M 2002 X Children's size

List Price
\$2.00
1.50

BLOCK CORK RING BUOYS

Made up of solid block cork slabs turned round and smooth. Canvas covered and roped. Passes government inspection for use on passenger vessels, etc.



Stock No.	Length inches
M 1139 B	16
M 1140 B	19
M 1141 B	21
M 1142 B	24
M 1143 B	27
M 1144 B	30

PAINTING AND LETTERING RING BUOYS

Ring Buoys are usually exposed to the weather, and it is well to have them painted, which not only preserves them but keeps them from getting water soaked. Painted with two coats of white lead and lettered in black—extra.

On boats carrying passengers for hire (this includes rented launches at boat liveryes only), the never-sink jacket or block cork life preserver will be approved.

METALLIC LIFE BOATS



All sizes are constructed in accordance with the U. S. Steamboat Inspection Service and approved and recommended by the Board of Supervising Inspectors of Steam Vessels.

Sizes and Capacity for Vessels over 150 Tons

Length		Beam		Depth	Cubic feet	Capacity	
						On Ocean, Bay, Lake and Sound	On Rivers
10 ft.	x	3 ft. 6 in.	x	1 ft. 6 in.	32	3 persons	4 persons
12 ft.	x	4 ft. 0 in.	x	1 ft. 9 in.	50	5 persons	6 persons
14 ft.	x	4 ft. 6 in.	x	2 ft. 0 in.	76	7 persons	9 persons
14 ft.	x	5 ft. 0 in.	x	2 ft. 2 in.	91	9 persons	11 persons
16 ft.	x	5 ft. 0 in.	x	2 ft. 1 in.	100	10 persons	12 persons
16 ft.	x	5 ft. 6 in.	x	2 ft. 1 in.	120	12 persons	15 persons
18 ft.	x	5 ft. 6 in.	x	2 ft. 3 in.	134	13 persons	17 persons
20 ft.	x	6 ft. 0 in.	x	2 ft. 6 in.	180	18 persons	22 persons
22 ft.	x	6 ft. 0 in.	x	2 ft. 6 in.	198	20 persons	25 persons
24 ft.	x	7 ft. 0 in.	x	3 ft. 0 in.	302	30 persons	38 persons
26 ft.	x	7 ft. 9 in.	x	3 ft. 4 in.	402	40 persons	50 persons
28 ft.	x	8 ft. 4 in.	x	3 ft. 7 in.	500	50 persons	63 persons

CLARK'S PATENT METALLIC LIFE RAFT



Of the latest revised type built according to Rules and Regulations of the Board of Supervising Steamboat Inspectors. Each raft is furnished with oars, oarlocks, lifelines, floats, boat hook, paddles and painter.

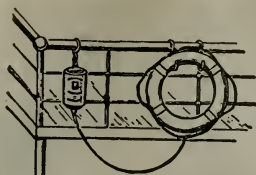
Rafts are composed of independent galvanized iron tanks, securely fastened together in a wooden frame thoroughly braced and bolted. Tanks are constructed of No. 20 galvanized iron with flanged heads, double riveted and soldered. Each tank is fitted with testing flange and cap for air pump connection and tested and painted before being assembled within framework.

List of Sizes

Capacity Number Person	Allowed on Ocean, Lake, Sound and River	Dimensions of Raft		Number of Tanks in Raft	Dimensions of Tanks		Cubic Feet in Boat Measurement	Weight of Raft
		Length	Width		Length	Width		
4		5 ft. 1 in.	3 ft. 10 in.	6	24 in.	12 in.	40 ft.	150
6		7 ft. 9 in.	4 ft. 10 in.	9	24 in.	12 in.	60 ft.	225
8		7 ft. 9 in.	4 ft. 10 in.	12	24 in.	12 in.	80 ft.	300
10		10 ft. 4 in.	5 ft. 3 in.	16	24 1/2 in.	13 in.	100 ft.	425
15		12 ft. 10 in.	5 ft. 7 in.	15	24 in.	16 in.	150 ft.	570
20		12 ft. 10 in.	7 ft. 2 in.	20	24 in.	16 in.	200 ft.	750



Fig. A476

**THE WATER LIGHT**

Showing outside of light
and method of attaching light
and buoy to ship's rail.

Fig. A476 LIFE BUOY WATER LIGHT

Approved by the U. S. Board of Supervising Inspectors

By attaching a line to the ring at the bottom of the light and then to the ring buoy, and hanging the light on the rail by the ring at the top, it is only necessary to pull the light from the hook (which unseals a soft metal cap), and this operation makes the light self-igniting the moment it strikes the water.

Size, 8x10 inches. Weight, 5½ lbs. 250 candle power. Burns 45 minutes.
Priceeach \$5.00



Fig. A477

Fig. A477 WATER LIGHT

For Life Boat and Raft Equipment

As Approved by the U. S. Board of Supervising Inspectors

This light has a small metal cap attached to a ring, i. e., A. By pulling this ring unseals the light; same is then ready for emergency use, either on board ship, or can be thrown overboard attached to a rope. This light is also buoyant, burns for over one hour and gives 300 candle power light.
Each\$5.00

DISTRESS OUTFITS

For Life Boats

As Approved by the U. S. Board of Supervising Inspectors



Fig. A478

2 MINUTE SELF-IGNITING RED LIGHTS

Packed in Water-Tight Cans

12 for Life Boats.....per set \$7.00
6 for Life Rafts....." 4.00

SEA ANCHOR OR MARINE DRAG

Fig. M30

A sea anchor should be on board every boat that is liable to be caught out in a blow. Their value in such a case cannot be overestimated, being made for heavy water. Our sea anchors are heavily roped, being made of heavy canvas and fitted with wrought iron folding ring so that they can be conveniently stowed in a locker or small place. Prices on application.

Stock No.	Diameter inches	Length inches	Suitable for Boats, Length, feet
M2S3X	18	42	20
M2S4X	24	48	22
M2S5X	30	54	25
M2S6X	36	60	30 to 35
M2S7X	42	66	36 to 40
M2S8X	48	72	41 to 50

MARINE NIGHT SIGNALS

Percussion



Fig. A479

Red or Blue.....per doz. \$5.00
Holderseach 2.50

SHIP ROCKET

These rockets rise to a height of over 400 feet and throw a shower of red balls that can be seen at a great distance.

2 poundsper doz. \$7.00
Galvanized Magazine for same.....each 3.00

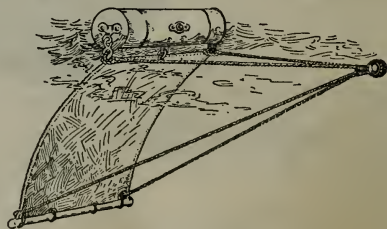
CARPENTER LIFE BOAT DRAG
With Oil Attachment, U. S. Standard

Fig. A481

This drag combines strength with simplicity, occupies small space and can be opened for use immediately.

No. 1. For boats up to 24 feet.....each \$6.00
No. 2. For boats up to 28 feet....." 6.75
No. 3. For boats over 28 feet....." 9.00

MOTOR BOAT LIGHTS

For Class 2 and Class 3 Boats
Galvanized Iron and Polished Brass



Side Light.



Bow Light.



Anchor Light.

CLASS 3 MOTOR BOAT LIGHTS

For Boats 40 ft. to 65 ft.

These Motor Boat Lights are made to comply with government regulations governing boats of Class 3, 40 to 65 ft. in length, and will pass government inspection on such boats.

In Sets of 3.

Galvanized.	Stock Nos.	Pol. Brass.	Style of Light.	Size Glass, Width, Height, inches.	Height, Frame, inches.	Extreme Height, inches.
M 1301 E		M 1307 E	{ Side Bow	5 3/4 x 5 1/4	8	14
M 1103 E		M 1116 E		7 3/4 x 4 1/2	8	14
			Stern	5 3/4 x 5	13	15

CLASS 2 MOTOR BOAT LIGHTS

For Boats 26 ft. to 40 ft.

These Motor Boat Lights are made to comply with government regulations governing boats of Class 2, 26 to 40 ft. in length, and will pass inspection on such boats.

In Sets of 3.

Galvanized.	Stock Nos.	Pol. Brass.	Style of Light.	Size Glass, Width, Height, inches.	Height, Frame, inches.	Extreme Height, inches.
M 1401 E		M 1407 E	{ Side Bow	5 x 4	6 1/2	10 1/2
M 1101 E		M 1115 E		7 1/2 x 4	8 1/2	10 1/2
			Stern	4 3/4 x 4 1/4	10	14

CLASS 1, FRESNAL MOTOR BOAT LIGHTS

Galvanized Iron and Polished Brass

These lights are made to comply with government regulations governing boats of Class 1, under 26 ft. in length, and will pass inspection on such boats. Inasmuch as the law does not specify that a Fresnal lens must be used on lights for boats under Class 1, either Fresnal or plain lens, which are listed on the following page, will be accepted.

The forward light, which is a combination lantern having a red and green Fresnal lens, is fitted with a removable screen in front, projecting 3 1/2 inches.

No. 5. COMBINATION LIGHT

Galvanized.	Stock Nos.	Pol. Brass.	Size of Glass, Width and Height, inches.	Extreme Height, inches.	Width of Base, inches.
M 1502 E		M 1508 E	4x3	8 1/2	5

No. 1. STERN LIGHT

Galvanized.	Stock Nos.	Pol. Brass.	Diam. of Glass, inches.	Height of Glass, inches.	Extreme Height, inches.
M 1505 E		M 1510 E	3	3 1/2	8



No. 5.
Combination.



No. 1.
Stern Light.

We are headquarters for Marine Hardware. The full line is shown in our Marine Catalog.

FRESNAL TUG AND STEAMER LIGHTS

Galvanized Iron and Polished Brass



Side Light



Bow Light



Anchor Light

SIDE LIGHTS IN PAIRS

Stock Nos. Gal.	Pol. Brass.	Suitable for	Dimensions of Lens, inches.	Extreme Height, inches.
M 901 F	M 909 F	Tug	6¾ x 6¾	18
M 902 F	M 910 F	Steamer	10 x 7½	19

BOW LIGHTS

Stock Nos. Galvanized.	Pol. Brass.	Suitable for	Dimensions of Lens, inches.	Extreme Height, inches.
M 903 F	M 911 F	Tug	6¾ x 6¾	15
M 904 F	M 912 F	Steamer	9 x 8	21

ANCHOR LIGHTS WITH WHITE LENS

Stock Nos. Galv.	Pol. Brass.	Suitable for	Dimensions of Lens, inches.	Extreme Height, inches.
M 1112 E	M 1124 E	Tug	6¾ x 6¾	19
M 907 F	M 908 F	Steamer	8½ x 7	23

ANCHOR LIGHTS WITH COLORED LENS

Stock Nos. Galv.	Pol. Brass.	Color of Lens.	Dimensions of Lens, inches.	Extreme Height, inches.
M 1105 E	M 1117 E	Red	4¾ x 4¼	14
M 1103 E	M 1118 E	Green		
M 1107 E	M 1119 E	Red	5¼ x 5	15
M 1108 E	M 1120 E	Green		
M 1110 E	M 1122 E	Red	6 x 5½	18
M 1111 E	M 1123 E	Green		
M 1113 E	M 1125 E	Red.	6¾ x 6¾	19
M 1114 E	M 1126 E	Green		

BUFFALO PATTERN STEAM-
ER SIGNAL LIGHTSJapanned Tin, Galvanized Iron and
Planished Brass

SIDE LIGHTS (1 PR.) AND BOW LIGHTS

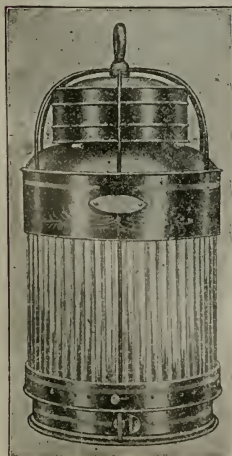
(1) IN SET OF 3 LIGHTS

Tin.	Stock Nos. Galv.	Brass.	Size of Lens, inches.
M 915 F	M 916 F	M 917 F	8
M 918 F	M 919 F	M 920 F	10

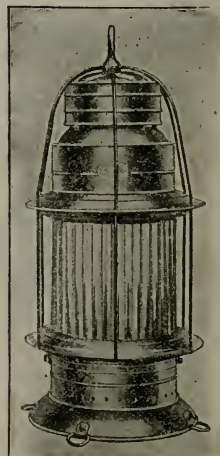
ANCHOR LIGHTS

Tin.	Stock Nos. Galv.	Brass.	Size of Lens, inches.
M 921 F	M 922 F	M 923 F	8

We carry a complete assortment of Lens and parts for all our lights. Repairs attended to promptly.



Bow Light



Anchor Light

CARPENTER ELECTRIC RUNNING LIGHTS

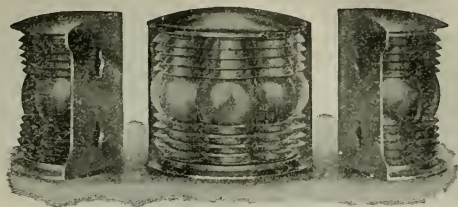


Fig. M1506EX Polished Brass

These lights are made in three sizes for motor boats of Class 1, Class 2 and Class 3.

The bodies of the lamps are thin brass castings. The removal of two screws releases the tops of the lamps so that lens and bulbs can be removed. Rubber gaskets keep lenses from rattling and prevent breakage.

Fitted with Bayonet base sockets and 6 V. Mazda bulbs, approximately 3 C. P., with wires extending through the back of the lamps. Wires will be extended through the bottom of lamps if preferred, and low voltage bulbs for operating on dry cells furnished in place of regular equipment if desired.

Class 1 lights consist of one pair of side lights, which can be used in place of a combination light.

Class 2 and Class 3 lights are made up in sets, consisting of a pair of side lights and one bow light.

Keyhole slots are cut in the back of the lamps so that round head screws set on the light boxes will hold them in place.

Stock Number	Class	Height Over-All inches	Width of Base inches	Weight per Set Lbs.
M1506EX	1	3 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$
M1606EX	2	4 $\frac{1}{2}$	3	7 $\frac{1}{4}$
M1607EX	3			

CARPENTER ELECTRIC POST LIGHT

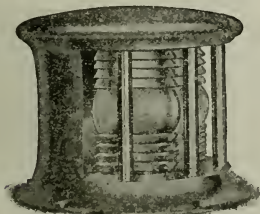


Fig. M1511EX Polished Bronze

Combines Class 2 bow light with a heavy and practical snubbing post. Will match our Class 2 electric running lights.

The post light is made to screw on to the deck, and is fitted with Bayonet base socket and 6 V., 3 C. P. Mazda bulb, with wires for making connections.

Stock Number	Extreme Height, inches	Diam. of Post, inches	Diam. of Base, inches	Weight Lbs.
M1511EX	5 $\frac{1}{4}$	5 $\frac{1}{4}$	6 $\frac{3}{8}$	6

CARPENTER CLASS 1 ELECTRIC COMBINATION LIGHT

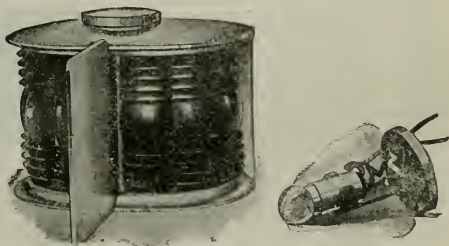


Fig. M1611EX

A combination light for Class 1 boats, that is compact, neat and durable, and that will add to the appearance of any craft upon which it is put.

The body is cast bronze. The top, to which the lamp is fastened, is detached by a half turn. For a more detailed description see specifications of other lamps on this page.

Stock Number	Height inches	Base inches	Weight Lbs.
M1611EX	4	2 $\frac{5}{8}$ x 5 $\frac{1}{2}$	5

A full line of Marine lights is shown in our Marine catalog.

THE CARPENTER WIRELESS SEARCHLIGHT



Fig. 172A

The Carpenter Wireless Searchlight is constructed to harmonize with other deck hardware. It is perfectly balanced and makes an ideal installation on any craft.

All parts are cast bronze, highly polished. The wiring is concealed within the fork and base, which are cast hollow, eliminating all exposed wiring, and reducing the wear to a minimum. The lamp and fork are removable from the base; the plug contact in the base breaks the contact when the lamp is removed.

The reflector is 8 inches in diameter in the Cabin type, and 5 or 8 inches in the Deck type. The reflectors are of highest grade silver and the lights are fitted with 6 volt Mazda lamps. Other voltages will be furnished if specified at time of ordering.

Prices on application.

THE CARPENTER SEARCHLIGHT CONTROL

The Carpenter Searchlight Control is the only control of its kind on the market, that will control both actions of the searchlight with one lever. It has a Universal action, allowing the beam to be thrown up or down, or to right or left, with but the single control lever shown in the illustration. It can be attached to any type of Cabin searchlight having a $\frac{3}{8}$ inch control rod, and can be installed any distance from the searchlight.

Furnished with a bulkhead plate, handle, etc., complete with the exception of the rod used in making the connection.



Fig. 172B

Used in combination with the Carpenter Wireless Searchlight, it forms the most compact and efficient article of its kind in use today, and its simple—yet sturdy—construction, and satisfactory service have made it an instant favorite in the boating fraternity.

Prices on application.

DECK TYPE ARC SEARCHLIGHT PROJECTORS

This searchlight is made for 110 or 125 volt direct current unless otherwise specified.

The light is made of heavy brass, highly polished and supported on ball bearings so that it can be operated with the least possible friction. The base is made of polished brass and aluminum. Mangin ground glass silver plated mirrors are used. The carbon feeding mechanism is made so that it is impossible for it to stick as the carbon holders are pivoted on the lower ends, doing away with the slides. An automatic cut-off is provided to break the current to the feed coil, thereby stopping the feed, should the operator neglect to pull the switch when the carbons are consumed to a safe distance from the carbon holders.



Stock No.	Size, inches
M 690 X	8
M 691 X	10

Stock No.	Size, inches
M 692 X	15
M 693 X	20

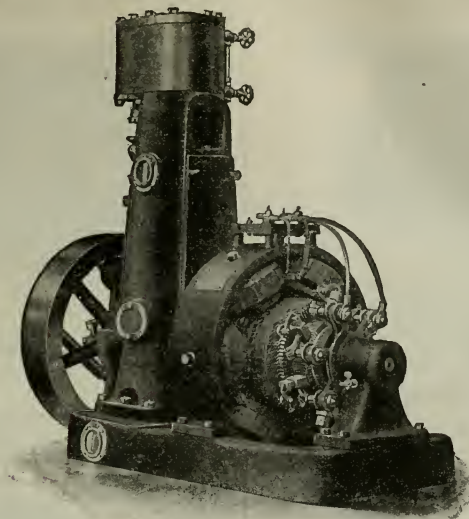
CABIN TYPE ARC SEARCHLIGHT PROJECTORS

This cabin type searchlight is similar in other respects to the 10 inch deck type projector, excepting the controlling device, which is made of polished brass and can also be furnished for distant control, which is operated by wire cables.



Stock No.	Size, inches
M 694 X	8
M 695 X	10
M 696 X	15
M 697 X	20

GENERATING SETS



DIRECT CONNECTED, STEAM DRIVEN

Engberg Direct Connected Steam Driven Generator Sets are made within a range of from $2\frac{1}{2}$ to 50 Kilowatt. They are well known to the trade and have an established reputation for long service and freedom from repairs. Accessibility and ease of adjustment of all working parts is a distinctive feature. Each set before being shipped is carefully tested and guaranteed in perfect working order and they specially guarantee the rating, stability and performance of same. These generators are of the Multipolar type and compound, wound for 110 volts, unless otherwise specified. Detailed information will be furnished on application.

K. W.	No. of Poles.	Size of Engine.	Steam Pressure.	Rev. per Minute.	Diameter Steam.	Pipes. Exhaust.	Net Weight, Lbs.
$2\frac{1}{2}$	6	$3\frac{1}{2} \times 3\frac{1}{2}$	90	625	1	$1\frac{1}{4}$	570
$3\frac{1}{2}$	6	$4\frac{1}{2} \times 4$	90	525	$1\frac{1}{4}$	$1\frac{1}{2}$	940
6	6	6x5	90	400	$1\frac{1}{2}$	2	1775
8	6	7x6	90	375	2	$2\frac{1}{2}$	2350
10	6	7x6	90	350	2	$2\frac{1}{2}$	2675
15	6	7x8	90	325	$2\frac{1}{2}$	3	3400
20	6	8x8	90	325	3	$3\frac{1}{2}$	4950
25	8	10x8	90	325	3	$3\frac{1}{2}$	6100
30	8	10x9	90	300	3	$3\frac{1}{2}$	7000
40	8	10x10	90	300	3	$3\frac{1}{2}$	10000
50	8	12x10	90	275	3	$3\frac{1}{2}$	11000

DIRECT CONNECTED, GASOLINE DRIVEN

We are listing and describing below two sizes of direct connected gasoline driven generator sets, which have been meeting with general approval.

The No. 1 size has a single cylinder, 4 cycle engine and will light 25 incandescent lamps of 16 C. P. each. The No. 2 has double cylinder, 4 cycle engine and will light 50, 16 C. P. lamps. The dynamos are wound to 110 volts.

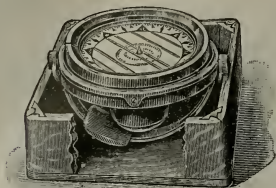
The engines are fitted with heavy fly-wheel and the speed at which they are run makes the lights absolutely steady. There is no disagreeable flickering such as is sometimes associated with gasoline engine driven dynamos.

On one side of the engine is a circulating pump for pumping the cooling water through the water jacket. The engine is fitted with carburetor, batteries, coil and multiple tank oiler. Ignition by jump spark. Gasoline may be taken from main supply tank or auxiliary, whichever is more convenient to the user.

No.	Length, inches.	Width, inches.	Height, inches.	Speed.	Weight, Lbs.
1	34	20	30	750 r.p.m.	475
2	42	20	30	750 r.p.m.	900

Other sizes of gasoline driven generator sets can be furnished, and prices, together with illustrations and description, will be furnished upon application.

BAKER'S PATENT OIL COMPASS

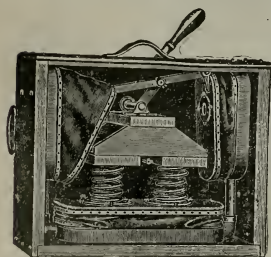


We believe this to be the finest compass made. It has been on the market for over 25 years and is well known to the marine trade. It will regularly be supplied with the new style navy card, reading from 0 to 360°, but the old style card can be supplied to order, if preferred.

Prices on Application.

Stock No.	Diameter of Card inches	Size of Square Box inches
M 148 V	3	6
M 149 V	4	8
M 151 V	5 ¾	9 ¾
M 153 V	6 ¾	11
M 154 V	7 ½	12

LOTHROP'S FOG HORN



Cut Shows Interior Arrangement

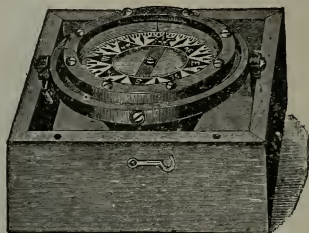
The Lothrop's Fog Horns are well known and need no introduction. They are well made in every respect, strong, serviceable and will last for years. The only part that is likely to become worn out in time is the reed, and this can be replaced

for less than a dollar on all but the largest size.

Prices on Application.

Stock No.	Type	Dimensions, inches			Weight Lbs.
	Boat	Length	Width	Height	
	Yacht	17 ½	9	10 ½	19
	Vessel	20 ½	9 ½	16 ¾	33
	Double Horn	20 ½	9 ½	18	39

CARPENTER SPIRIT COMPASS

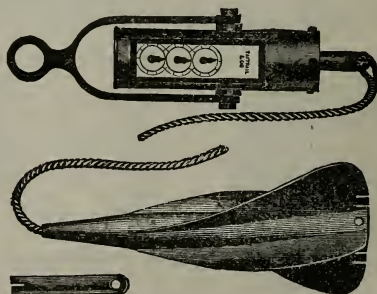


A reliable liquid compass, well made, to answer all requirements for motor boat use. Mounted in mahogany box with cover.

Prices on Application.

Stock No.	Diameter of Card inches	Size of Square Box inches
M 118 V	2	4 ½
M 119 V	2 ½	5 ¼
M 120 V	3	6
M 121 V	4	8
M 123 V	5	9

CARPENTER TAFFRAIL LOG



A moderate priced Log. More of them used on the Great Lakes than any other make. A complete Log packed in a wood box consists of Register, Line, Rotator and Hook.

Prices on Application.

Stock No.	Complete Log.
M 834 X	Extra Rotator.
M 835 X	Extra Line (200 ft.).
M 836 X	

THE ARTICLES SHOWN ABOVE ARE ONLY A SMALL PART OF THE LARGE LINE WE CARRY, AND LIST, IN OUR MARINE CATALOG

SHIP CLEATS

Galvanized Cast Iron



Stock No. Galvanized	Length inches	Dimensions of Base, inches
M 1201 G	4	1 3/4 x 1 1/4
M 1202 G	5	2 x 1 3/8
M 1203 G	6	2 3/4 x 1 1/2
M 1204 G	7	3 3/8 x 1 3/4
M 1205 G	8 1/2	4 1/4 x 2 3/8
M 1206 G	10 1/2	4 7/8 x 2 3/4
M 1207 G	13	6 1/2 x 3 3/8
M 1208 G	15	7 1/8 x 3 5/8
M 1209 G	18	7 3/4 x 3 7/8
M 1210 G	24	8 1/2 x 5 1/2
M 1211 G	28	10 1/8 x 5 1/8

BOW CHOCKS

Galvanized Iron and Polished Bronze



Stock Nos.	Polished Bronze	Length inches
Galvanized		
M 1422 G	M 1601 D	3
	M 1602 D	4
M 1423 G		4 1/2
	M 1604 D	5
M 1424 G		5 1/2
M 1425 G	M 1606 D	6 1/2
M 1426 G	M 1607 D	8
	M 1608 D	9
M 1427 G	M 1609 D	10
M 1428 G	M 1610 D	12 1/2
M 1111 G		15
M 1112 G		18
M 1113 G		20
M 1114 G		24
M 1115 G		30

CANOE CLEATS

Polished Bronze



Stock No.	Length inches	Base Dimensions inches
M 1415 D	2 5/8	1 x 7/16
M 1416 D	3 3/4	1 1/2 x 1/2

OPEN BASE CLEATS

Galvanized Malleable Iron and Polished Bronze



Stock Nos.	Polished Bronze	Length inches
Galvanized		
M 1307 G	M 1301 D	2 1/2
M 1308 G	M 1302 D	3 1/2
M 1309 G	M 1303 D	4 1/2
M 1310 G	M 1304 D	5 1/2
M 1311 G	M 1305 D	6
M 1312 G	M 1306 D	7
M 1313 G	M 1307 D	8
M 1314 G	M 1308 D	9
M 1315 G	M 1309 D	10
M 1316 G	M 1310 D	12
M 1317 G	M 1311 D	14
		18

NOTE.—The 18 inch galvanized is cast iron.

OPEN STRAIGHT CHOCK

Galvanized Iron and Polished Bronze



Stock Nos.	Polished Bronze	Length inches	Width inches	Opening inches
Galvanized				
M 1501 G	M 1701 D	3 1/2	1 1/8	1/2
M 1502 G	M 1702 D	4	1 1/8	1 1/8
M 1503 G	M 1703 D	4 1/2	1 1/4	1 1/8
M 1505 G	M 1705 D	5 1/2	1 1/2	1 3/8
M 1506 G	M 1707 D	6 1/2	1 1/2	1 5/8
M 1509 G	M 1709 D	7 1/2	1 11/16	1 1/4
M 1511 G	M 1711 D	8 1/2	1 7/8	1 3/8
M 1512 G	M 1713 D	10 1/2	2 1/4	1 7/8
M 1513 G	M 1714 D	13	2 5/8	2 3/4
M 1213 G		15	2 7/8	3 1/2
M 1214 G		18	3 3/8	3 3/4
M 1215 G		20	3 3/4	4 5/8
M 1216 G		22	3 3/4	5 3/8
M 1217 G		24	4 1/2	6
M 1218 G		30	4 1/2	6

ROUND BOTTOM CLEATS

Galvanized and Polished Bronze



Stock Nos.	Polished Bronze	Length inches
Galvanized		
M 1401 G	M 1419 D	2 1/4
M 1402 G	M 1420 D	3
M 1403 G	M 1421 D	3 1/2

KEDGE ANCHOR

Galvanized and Black Wrought Iron



The following sizes are carried in stock, both Galvanized and Blacked. Larger sizes furnished to order. Prices upon application.

Pounds	Pounds	Pounds	Pounds
4	50	225	400
8	70	250	425
12	90	275	450
16	125	300	475
20	150	325	500
30	175	350	
40	200	375	

MUSHROOM ANCHOR

Black or Galvanized Iron



Steel shank—riveted to head. Other sizes to order.

Made in the following sizes; prices upon application:

Pounds	Pounds	Pounds	Pounds
5	35	125	500
10	40	150	600
15	50	300	800
20	70	350	1000
25	75	400	1200
30	100	450	

DIRIGO FOLDING ANCHOR

Galvanized Iron

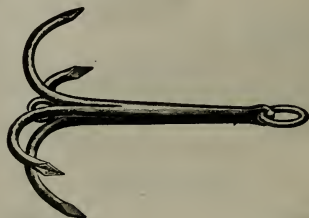


This is the only practical Anchor on which both stock and flukes fold up. They are kept either open or closed, as desired, by the same pin. It has all the good qualities of a regular Anchor when in use, and in addition the advantage of being compact for stowage. Prices upon application.

Weight lbs.	Length inches	Weight lbs.	Length inches
4	17	25	33
8	22	30	34
12	25	44	38
16	28	55	41
20	30	76	44

GRAPNELS

Black and Galvanized Wrought Iron



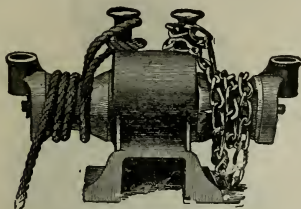
Made in the following sizes for stock, any size to order; prices upon application.

Pounds	Pounds	Pounds
3	8	25
5	12	

A MORE COMPLETE LINE OF ANCHORS TO SELECT FROM IN OUR MARINE CATALOG

DOUBLE BARREL WINDLASS WITH BITTS

Galvanized Iron and Polished Bronze

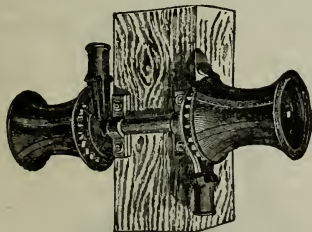


It contains all the qualities of the Windlass, and is besides an improved Bitt and Cleat. Made with solid base for launches or with opening for step of bowsprit heel on sail boats.

Stock Nos.	Height inches	Length from Outside to Outside inches	Diam. of Drum inches	Base Dimensions inches	Bored for Bolt Diam. inch
Galvanized Iron					
Polished Bronze					
M253X M256X	9	15	3 1/4	8 1/2 x 8 5/8	5/8
M254X M257X	10	17	3 1/2	8 5/8 x 9	5/8
M255X M258X	12 1/2	20	4 1/2	10 1/2 x 11	5/8

IMPROVED GYPSEY WINDLASS

Painted or Galvanized Iron

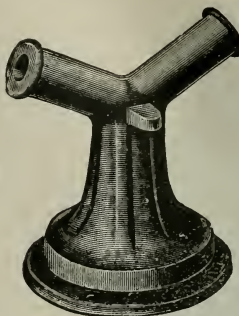


Bitts are measured from outside to outside—there may be one or two. Will be furnished to fit any size bitts to order.

Size	Length of Head inches	Diam. of Head on Outside inches	Regular Size from to Outside of Bitts inches	Estimated Weight Lbs.	Size of Chain inch
E	5 1/4	4 1/2	6	35	3/8
D	6	5	8	55	1/2
C	6 1/2	7 1/2	10	80	5/8
B	7	7 1/2	12	100	3/4
0	8	8 1/2	12	155	3/4
1	9 1/2	10	14	200	1/2
2	12	11 1/2	16	280	5/8
2 1/2	13	13	18	340	5/8
3	14 1/2	13 1/2	20	425	3/4
3 1/2	16 1/2	14 1/2	22	588	3/4

CAVEL CAPSTAN

Cast Iron, Painted



This Capstan is single purchase and revolves with the Sun. It will stand all that four men can pull on it and will handle line up to 2 inches in diameter, hauling up anchors from 500 to 700 pounds weight. A piece of 1 1/2 inch pipe about four feet long usually serves for levers. To lubricate, oil through either horn.

Height inches	Tip to Tip of Horns inches	Diameter of Base inches	Weight lbs.
18	16 1/2	14 1/2	115

VICTOR CAPSTAN



A compact and strong little machine furnished in galvanized iron or painted red and black.

Stock Nos.	Diameter of Drum inches	Diameter of Base inches	Height from Deck inches	Length of Lever inches	Weight Lbs.
Painted Red and Black					
Galvanized					
M 241 X M 243 X	4	9	10	28	50
M 242 X M 244 X	5	12	15	36	120

CAPSTAN BARS

None of the capstans catalogued are furnished with capstan bars, excepting the Victor. We will furnish capstan bars to order, and in ordering specify for what size and make of capstan the bars are wanted or send a sketch giving the diameter at the small as well as the large end of taper and length of handle over all.

These are only a few of the Capstans we stock. The rest are listed in our Marine Catalog. Have you a copy?

THE PROVIDENCE Single Barrel Steam Capstan



The Single Barrel Steam Capstan is especially useful for working the hawsers of steamships while backing toward wharves or turning in narrow channels, and for barges, schooners and tugs in rapid currents. It also is available for elevators and drydocks and for warping vessels through locks, and for all kinds of hoisting on shipboard or land.

Double gearing provides power or speed. The changes are effected by placing the block key in the base for power and in the head for speed. The speed can be increased about three times in this way when the load does not require the low gear for power.

The engines can be hung under the deck, as represented in the illustration, or can be laid on top of the deck below. **Non-reversing** or **brass-link reversing** engines are furnished.

Before shipment the capstan and engines are tested under actual working conditions.

With Non-Reversing Engines

No.	Size	Diam. of Barrel over Whelps, inches	Diam. of Base, inches	Height inches	Double Cylinders, inches	Circumfer- ence of Rope, inches	Approx. Net Weight, lbs.
A	8	21	25 1/2	4x4	4	900	
B	8 1/2	22 1/2	31	4x6	4 1/2	1,600	
C	9 1/2	27 1/4	33 1/2	4x6	5	1,900	
D	10 1/2	29 1/4	38	5x7	6	2,850	
E	11 1/2	31 1/4	38 3/4	6x8	7 1/2	3,650	
F	12 1/2	33	42 1/2	7x8	9 1/2	4,600	
F	12 1/2	33	42 1/2	8x8	9 1/2	5,000	
G	15 3/4	42	42	7x8	11	5,350	
G	15 3/4	42	42	8x8	11	5,750	

THE PROVIDENCE CRANK CAPSTAN



Arranged for both speed and power. Reversal in direction of rotation of cranks the only change necessary.

Size	Diam. of Bbl. Over Whelps, inches	Diam. of Base, inches	Height, inches	Weight, lbs.	Circumference of Rope, inches
O	7 1/2	19	21	250	3 1/2
A	8	23	27 1/2	400	4
B	8 1/2	24 1/2	30 1/4	600	4 1/2
C	9 1/2	29 1/2	34 1/4	800	5
D	10 1/2	32	36	1000	6
E	11 1/2	34	37	1200	7 1/2
F	12 1/2	38	41	1500	9

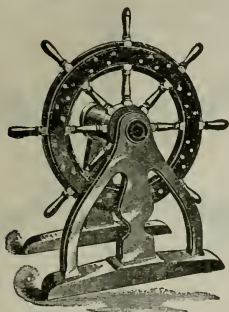
THE PROVIDENCE POWER CAPSTAN



Arranged for both speed and power. Reversal in direction of rotation of capstan bars the only change necessary.

Size	Diam. of Bbl. Over Whelps, inches	Diam. of Base, inches	Height, inches	Weight, lbs.	Circumference of Rope, inches
O	7 1/2	19	21	250	3 1/2
A	8	23	28	400	4
AA	8	23	28	450	4 1/2
B	8 1/2	24 1/2	31 1/4	500	4 1/2
BB	8 1/2	24 1/2	31 1/4	550	5
C	9 1/2	29 1/2	34 1/2	750	6
D	10 1/2	32	38	1100	6
E	11 1/2	34	39 1/2	1250	7 1/2

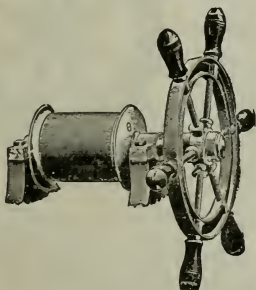
STEAMBOAT STEERING WHEEL



Mahogany wheel, with hickory spokes and hard wood drum. Ash standards, with bronze shaft and roller bearings.

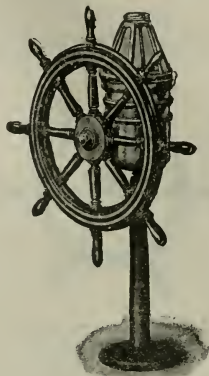
Stock No.	Size of Wheel inches	Diam. of Drum inches	Height from Deck to Center of Wheel inches
M 120 X	26	5	..
M 121 X	30	5 1/2	..
M 122 X	36	6	..
M 123 X	42	7	28
M 124 X	48	7 1/2	30
M 125 X	54	8	31
M 126 X	60	10	33

GALVANIZED DRUM STEERER



Stock No.	Diameter of Wheel inches	Dimensions of Drum, inches	
		Diameter	Length
M 1101 C	20	4 1/2	5
M 1102 C	22	4 1/2	6
M 1103 C	25	6	7
M 1104 C	28	6 1/2	8 1/2
M 1105 C	30	7	10
M 170 X	36	8	12
M 171 X	42	9	14

COMBINATION STEERER Polished Bronze

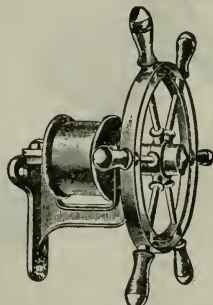


Outfit complete with liquid compass, binnacle head, with night hood and lamps and with either fancy wood or polished bronze steering wheel. All bronze and heavy construction throughout. Gears, shaft, rack and pinion of bronze.

When ordering, send vertical distance from center of rack to top side of deck.

Stock No.	Diam. of Wheel inches	Fitted with Compass Diam. of Card, inches	Distance from Center of Wheel to Deck, inches
M 101 X	30	4	31 1/2
M 102 X	36	5 1/4	37
M 103 X	40	6 3/4	37

BRACKET STEERER Galvanized and Wood Wheels



Stock Nos.	Diam. of Wheel Over All inches		Diam. of Drum inches
	Galvanized	Polished Brass with Wood Wheel	
M 1223 C	M 1226 C	20	4
M 1224 C	M 1227 C	25	4 1/2
M 1225 C	M 1228 C	30	6

STEERING WHEELS WITH-
OUT DRUM

Galvanized Iron

Wood Handles with Brass Tips



Stock No.	Diameter of Wheel inches	Bored for Shaft inches	Size of Keyway inches
M 1235 C	12	5/8	3/8
M 1236 C	16	5/8	3/8
M 1237 C	20	1 1/8	1/2
M 1238 C	22	1 1/8	1/2
M 1239 C	25	1	1/2
M 1240 C	28	1 1/8	1/2
M 1241 C	30	1 1/4	7/8
M 163 X	36	1 3/8	1 1/8
M 164 X	42	1 3/4	3/8
M 165 X	48	1 7/8	3/8

30 to 48 inch wheels have 8 spokes; other sizes 6 spokes.

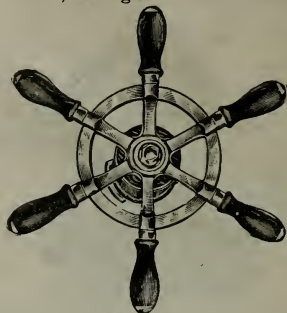
CARPENTER AUTO TYPE BOAT
STEERER

Drum Type

Stock No.	Style of Controls	Diam. of Wheel inches	Height from Bhd. Bracket to Wheel inches
M 332 A	Smooth Friction	16	24
M 333 A	Smooth Friction	18	24
M 1342 A	None	16	24
M 1343 A	None	18	24

STANDARD STEERING
WHEEL

Polished Brass, Mahogany Drum and Handles



Stock No.	Diam. of Wheel Over All, inches	Size of Drum inches	Length inches
M 1201 C	12	2 1/2	2 1/2
M 1205 C	16	3	3 1/2
M 1209 C	20	4	4 1/2
M 1210 C	25	4	5

FANCY WOOD STEERING WHEELS
With Polished Brass Hub

These steering wheels are made from well seasoned stock and fastened throughout with brass screws and screw heads capped with white holly plugs in the following combinations, all with brass hub and fastenings:

B. Mahogany rim, spokes, handles, and felloes (all mahogany).

C. Mahogany rim, felloes, spokes and handles, white holly plugs.

H. Inlay of ribbons on combination B. wheels, two sets white holly ribbons on forward side of wheel; white holly plugs on aft side of wheel.



Comb. B	Stock Nos. Comb. C	Comb. H	Diam. of Wheel inches	Bored for Shaft inches	Size of Keyway inches
M 137 X	M 144 X	M 151 X	20	7/8	1/4
M 138 X	M 145 X	M 152 X	24	1 1/8	1/4
M 139 X	M 146 X	M 153 X	28	1 1/8	1/4
M 140 X	M 147 X	M 154 X	30	1 1/8	1/4
M 141 X	M 148 X	M 155 X	36	1 1/8	1/4
M 142 X	M 149 X	M 156 X	42	1 3/8	1/2
M 143 X	M 150 X	M 157 X	48	1 3/8	1/2

The 36, 42 and 48 inch wheels are made with eight spokes; smaller sizes with 6 spokes. Wheels larger than 48 inches made to order.

WHEELS FOR ALL PURPOSES ARE LISTED IN OUR MARINE CATALOG

BLOCKS

WITH GALVANIZED WROUGHT IRON LOOSE HOOKS

Galvanized Malleable Iron Shells

In ordering specify number and state if wanted with or without becket.

Single,
no Becket

Length of Shell, inches	1 3/8	1 3/4	2	2 1/4	3	3 1/4	4	5
Size of Sheave inches.....	3/4 x 5/8	1 x 3/4	1 3/8 x 3/8	1 1/2 x 1/2	1 3/4 x 1/2	2 x 5/8	2 1/2 x 3/4	3 x 7/8
For Rope								
Diam. inches.	1/8	1/4	5/8	3/8	7/8	1/2	5/8	3/4
Single								
Number...	1	3	5	7	9	11	13	15
Each.....	.19	.22	.25	.31	.43	.48	.75	1.10
Double								
Number...	2	4	6	8	10	12	14	16
Each.....	.23	.27	.32	.38	.50	.60	.95	1.35

Double,
with Becket

BLOCKS

WITH MATCH HOOKS

Galvanized Malleable Iron

In ordering specify number and state if wanted with or without becket.

Single,
with Becket

Length of Shell, inches	1 3/8	1 3/4	2	2 1/4	3	3 1/4	4	5
Size of Sheave inches.....	3/4 x 5/8	1 x 3/4	1 3/8 x 3/8	1 1/2 x 1/2	1 3/4 x 1/2	2 x 5/8	2 1/2 x 3/4	3 x 7/8
For Rope								
Diam. inches.	1/8	1/4	5/8	3/8	7/8	1/2	5/8	3/4
Single								
Number...	1	3	5	7	9	11	13	15
Each.....	.41	.45	.50	.58	.66	.75	1.00	1.33
Double								
Number...	2	4	6	8	10	12	14	16
Each.....	.50	.54	.60	.70	.80	1.00	1.37	1.83

Double
no Becket

BLOCKS

WITH FAST EYE

Galvanized Malleable Iron
and Brass

Single, with Becket



Double, no Becket

Size	Length Shell inch	Dia. Rope inch	Sheave		Galv. each	Pol. Brass each
			Dia. inch	Thick inch		
No. 0	1 1/8	3/16	3/4	5/8	\$0.05	\$0.17
No. 1	1 3/8	1/8	3/4	5/8	.05	.23
No. 3	1 5/8	1/4	1	3/4	.07	.33
No. 5	2	5/8	1 3/8	7/8	.11	.45
No. 7	2 1/4	3/8	1 1/2	1 1/2	.16	.50
No. 9	2 3/4	7/8	1 3/4	1 1/2	.25	.70
No. 11	3	1 1/2	2	5/8	.29	.96
No. 13	3 3/4	5/8	2 1/2	3/4	.62	....
No. 15	4 3/4	3/4	3	7/8	.90	....

Size	Length Shell inches	Dia. Rope inch	Sheave		Galv. each	Pol. Brass each
			Dia. inch	Thick inch		
No. 00	1	1/8	1 1/8	3/8	\$0.06	\$0.23
No. 2	1 3/8	3/16	3/4	5/8	.09	.29
No. 4	1 3/4	1/4	1	3/4	.13	.44
No. 6	2	5/8	1 3/8	7/8	.18	.58
No. 8	2 1/4	3/8	1 1/2	1 1/2	.23	.70
No. 10	3	7/8	1 3/4	1 1/2	.33	.92
No. 12	3 1/4	1 1/2	2	5/8	.41	1.16
No. 14	4	5/8	2 1/2	3/4	.77	....
No. 16	5	3/4	3	7/8	1.12	....

Furnished with Patent Roller Sheaves to order

SINGLE DECK HALYARD BLOCKS

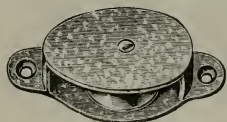
Galvanized Iron and Polished Bronze



Stock Nos. Galvanized.	Pol. Bronze.	Diameter of Rope, inch.	Diameter of Sheave, inches.	Thickness of Sheave, inch.
M 401 G	M 201 F	$\frac{1}{8}$	$1\frac{1}{4}$	$\frac{3}{8}$
M 402 G	M 202 F	$\frac{3}{8}$	$1\frac{1}{2}$	$\frac{1}{2}$
M 403 G	M 203 F	$\frac{1}{2}$	2	$\frac{5}{8}$
M 404 G	M 204 F	$\frac{5}{8}$	$2\frac{1}{2}$	$\frac{3}{4}$
M 405 G	M 205 F	$\frac{3}{4}$	3	$\frac{7}{8}$

SINGLE CHEEK HALYARD BLOCKS

Galvanized Iron and Polished Bronze



Stock Nos. Galvanized.	Pol. Bronze.	Diameter of Rope, inch.	Diameter of Sheave, inches.	Thickness of Sheave, inch.
M 410 G	M 210 F	$\frac{1}{4}$	$1\frac{1}{8}$	$\frac{3}{8}$
M 411 G	M 211 F	$\frac{1}{8}$	$1\frac{1}{4}$	$\frac{7}{8}$
M 412 G	M 212 F	$\frac{3}{8}$	$1\frac{1}{2}$	$\frac{1}{2}$
M 413 G	M 213 F	$\frac{1}{2}$	2	$\frac{5}{8}$
M 414 G		$\frac{3}{4}$	3	$\frac{7}{8}$

SINGLE STANDARD SIDE PULLEY

Galvanized Malleable Iron and Polished Bronze



Stock Nos. Galvanized.	Pol. Bronze.	Diameter of Rope, inch.	Size of Sheave, inches.	Base Dimensions, inches.
	M 305 F	$\frac{1}{4}$	$\frac{3}{4} \times 1\frac{1}{8}$	$2\frac{1}{2} \times \frac{7}{8}$
M 430 G	M 306 F	$\frac{1}{4}$	$1 \times 1\frac{1}{8}$	$2\frac{5}{8} \times 1\frac{1}{8}$
M 427 G	M 307 F	$\frac{1}{8}$	$1\frac{3}{8} \times \frac{3}{8}$	$3\frac{3}{8} \times 1\frac{1}{2}$
M 429 G	M 308 F	$\frac{3}{8}$	$1\frac{3}{4} \times 1\frac{1}{8}$	$4\frac{1}{2} \times 1\frac{1}{8}$

DOUBLE DECK HALYARD BLOCKS

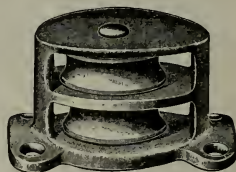
Galvanized Iron and Polished Bronze



Stock Nos. Galvanized.	Pol. Bronze.	Diameter of Rope, inch.	Diameter of Sheave, inches.	Thickness of Sheave, inch.
M 409 G	M 207 F	$\frac{3}{8}$	$1\frac{1}{2}$	$\frac{1}{2}$
M 406 G	M 208 F	$\frac{1}{2}$	2	$\frac{5}{8}$

DOUBLE CHEEK HALYARD BLOCKS

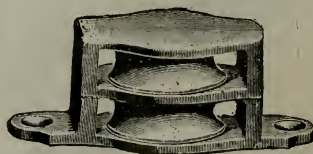
Galvanized Iron and Polished Bronze



Stock Nos. Galvanized.	Pol. Bronze.	Diameter of Rope, inch.	Diameter of Sheave, inches.	Thickness of Sheave, inch.
M 416 G	M 214 F	$\frac{1}{8}$	$1\frac{1}{4}$	$\frac{7}{8}$
M 418 G	M 215 F	$\frac{3}{8}$	$1\frac{1}{2}$	$\frac{1}{2}$
M 415 G	M 216 F	$\frac{1}{2}$	2	$\frac{5}{8}$

DOUBLE STANDARD SIDE PULLEY

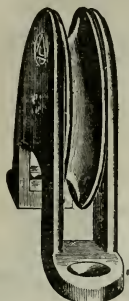
Polished Bronze



Stock No.	Diameter of Rope, inches.	Size of Sheave, inches.	Base Dimensions, inches.
M 311 F	$\frac{1}{4}$	$1 \times 1\frac{1}{8}$	$2\frac{5}{8} \times 1\frac{1}{8}$

WIRE ROPE DECK BLOCK

Galvanized Malleable Iron and Polished Bronze



Stock Nos.		Diameter of Rope, inches.	Diameter of Sheave, inches.	Thickness of Sheave, inch.
Galv.	Pol. Bronze.			
M 423 G	M 312 F	$\frac{1}{4}$ and $\frac{1}{8}$	1 $\frac{1}{8}$	$\frac{7}{16}$
M 424 G	M 313 F	$\frac{1}{8}$ and $\frac{3}{8}$	3	$\frac{1}{2}$
M 425 G	M 314 F	$\frac{3}{8}$ and $\frac{1}{2}$	4	$\frac{9}{16}$
M 426 G	M 315 F	$\frac{1}{2}$ and $\frac{5}{8}$	5	$\frac{7}{8}$

SINGLE FLAT WIRE ROPE PULLEY

Galvanized Iron, Plain and Polished Bronze



Stock Nos.		Diameter of Rope, inch.	Diameter of Sheave, inches.	Thickness of Sheave, inch.
Galv.	Plain Bronze. Pol. Bronze.			
M 501 G	M 226 F M 320 F	$\frac{3}{8}$	2 $\frac{1}{2}$	$\frac{3}{8}$
M 502 G	M 227 F M 321 F	$\frac{1}{4}$	3 $\frac{1}{4}$	$\frac{1}{2}$
M 503 G	M 229 F M 322 F	$\frac{1}{8}$ and $\frac{3}{8}$	4 $\frac{1}{2}$	$\frac{5}{8}$

DOUBLE FLAT WIRE ROPE PULLEY

Galvanized Iron, Plain and Polished Bronze



Stock Nos.		Diameter of Rope, inch.	Diameter of Sheave, inches.	Thickness of Sheave, inch.
Galv.	Plain Bronze. Pol. Bronze.			
M 504 G	M 232 F M 326 F	$\frac{3}{8}$	2 $\frac{1}{2}$	$\frac{3}{8}$
M 505 G	M 233 F M 327 F	$\frac{1}{4}$	3 $\frac{1}{4}$	$\frac{1}{2}$
M 506 G	M 234 F M 328 F	$\frac{1}{8}$ and $\frac{3}{8}$	4 $\frac{1}{2}$	$\frac{5}{8}$

WIRE ROPE CHEEK BLOCK

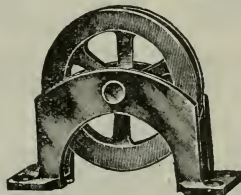
Galvanized Iron and Polished Bronze



Stock Nos.		Dimensions of Sheave, inches.	For Tiller Rope, inches.
Galv.	Pol. Bronze.		
M 431 G	M 222 F	1 $\frac{1}{8}$ x $\frac{3}{8}$	$\frac{1}{4}$ or $\frac{1}{8}$
M 432 G	M 223 F	3 x $\frac{1}{2}$	$\frac{1}{8}$ or $\frac{3}{8}$
M 433 G	M 224 F	4 $\frac{1}{8}$ x $\frac{1}{2}$	$\frac{3}{8}$ or $\frac{1}{2}$
M 434 G		5 x $\frac{1}{8}$	$\frac{1}{2}$ or $\frac{5}{8}$

SINGLE UPRIGHT WIRE ROPE PULLEY

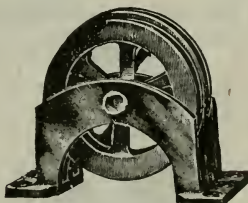
Galvanized Iron, Plain and Polished Bronze



Stock Nos.		Diameter of Rope, inch.	Diameter of Sheave, inches.	Thickness of Sheave, inch.
Galv.	Plain Bronze. Pol. Bronze.			
M 501 G	M 229 F M 323 F	$\frac{3}{8}$	2 $\frac{1}{2}$	$\frac{3}{8}$
M 508 G	M 230 F M 324 F	$\frac{1}{4}$	3 $\frac{1}{4}$	$\frac{1}{2}$
M 509 G	M 231 F M 325 F	$\frac{1}{8}$ and $\frac{3}{8}$	4 $\frac{1}{2}$	$\frac{5}{8}$

DOUBLE UPRIGHT WIRE ROPE PULLEY

Galvanized Iron, Plain and Polished Bronze



Stock Nos.		Diameter of Rope, inch.	Diameter of Sheave, inches.	Thickness of Sheave, inch.
Galv.	Plain Bronze. Pol. Bronze.			
M 510 G	M 235 F M 329 F	$\frac{3}{8}$	2 $\frac{1}{2}$	$\frac{3}{8}$
M 511 G	M 236 F M 330 F	$\frac{1}{4}$	3 $\frac{1}{4}$	$\frac{1}{2}$
M 512 G	M 237 F M 331 F	$\frac{1}{8}$ and $\frac{3}{8}$	4 $\frac{1}{2}$	$\frac{5}{8}$

SINGLE UPRIGHT CHAIN LEADER

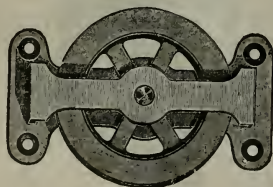
Finished Bronze Sheaves. Plain Bronze Frame



Stock No.	Diameter of Sheave, inches.	Width of Groove, inches.
M 303 F	2	$\frac{5}{16}$
M 304 F	$3\frac{1}{4}$	$\frac{5}{16}$

SINGLE FLAT CHAIN LEADER

Finished Bronze Sheaves. Plain Bronze Frame



Stock No.	Diameter of Sheave, inches.	Width of Groove, inch.
M 301 F	2	$\frac{5}{16}$
M 302 F	$3\frac{1}{4}$	$\frac{5}{16}$

CENTERBOARD BLOCK

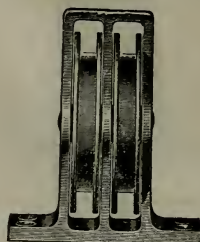
Galvanized Malleable Iron and Polished Bronze



Stock Nos.	Size of Sheave, inches.	Base Dimensions, inches.
Galvanized.		
M 435 G	$\frac{1}{2} \times 1\frac{1}{2}$	$2 \times 2\frac{3}{8}$
M 436 G	$\frac{5}{8} \times 2$	$2\frac{1}{2} \times 2\frac{3}{4}$
Pol. Bronze.		
M 426 F		
M 427 F		

DOUBLE UPRIGHT CHAIN LEADER

Finished Bronze Sheaves. Plain Bronze Frame



Stock No.	Diameter of Sheave, inches.	Width of Groove, inches.
M 407 F	2	$\frac{5}{16}$
M 408 F	$3\frac{1}{4}$	$\frac{5}{16}$

DOUBLE FLAT CHAIN LEADER

Finished Bronze Sheaves. Plain Bronze Frame



Stock No.	Diameter of Sheave, inches.	Width of Groove, inches.
M 405 F	2	$\frac{5}{16}$
M 406 F	$3\frac{1}{4}$	$\frac{5}{16}$

ERICKSON ELECTRIC LIGHT BLOCK

Galvanized Malleable Iron



For Wire Rope with or without Becketts.

Description.	Length of Shell, inches.	Diameter of Sheave, inches.	Thickness of Sheave, inch.
With Eye	5	4	$\frac{1}{2}$
With Eye and Becket	5	4	$\frac{1}{2}$
With Wrought Single Hook	5	4	$\frac{1}{2}$

BULL DOG CHAIN



Fig. 6

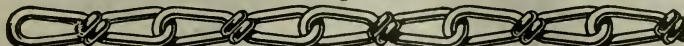


Fig. 4

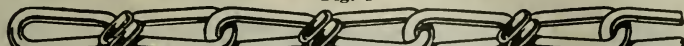


Fig. 2

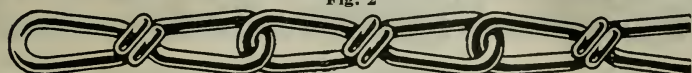


Fig. 1

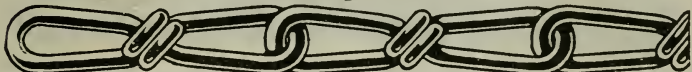


Fig. 0

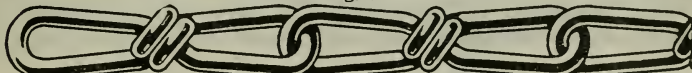


Fig. 2/0

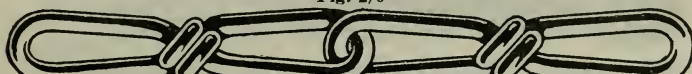


Fig. 3/0

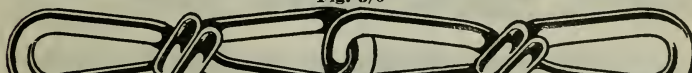


Fig. 4/0

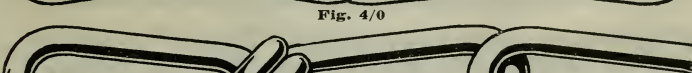


Fig. 5/0

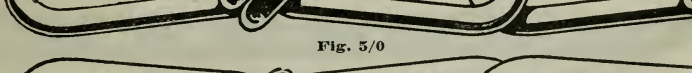


Fig. 6/0

Cuts are exact size of wire and chain.

The most popular weldless chain on the market. Both ends of a link are identical in shape, the planes lying at right angles to each other, the tie being at the center. The neatest, lightest chain, size for size, of any weldless wire chain, its uniformity and smoothness making it peculiarly adaptable to a wide variety of purposes. Supplied in coil (100 ft. packages, 250 ft. reels, kegs or barrels), cut to any length or fitted with attachments.

This chain is largely adopted by Porch Swing Manufacturers in the Hot Galvanized Polish Bright Finish and is supplied to such trade to their order. Samples and prices upon request. Send specifications and full data.

PRICES

In 100 ft. Packages, 250 ft. Reels or 500 ft. Kegs

List per 100 feet		List per 100 feet	
No. 6/0	\$7.50	No. 1	\$3.20
No. 5/0	6.50	No. 2	3.00
No. 4/0	6.00	No. 3	2.80
No. 3/0	5.00	No. 4	2.70
No. 2/0	4.00	No. 5	2.50
No. 0	3.50	No. 6	2.30
		No. 7	2.30

HODELL SASH CHAIN

Fig. 5/0



Fig. 4/0



Fig. 3/0

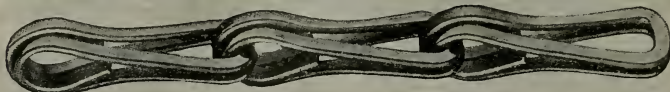


Fig. 2/0



Fig. 0



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Cuts Are Exact Size

In presenting Hodell Chain, we offer a flat chain which is novel and unique from the standpoint of being the only practical chain made from flat wire, embodying all the necessary qualifications for a flat chain combined with many important improvements.

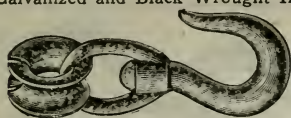
PRICES

In 100 Foot Packages, 250 Foot Reels or 500 Foot Kegs

	List per 100 feet		List per 100 feet
No. 6/0		No. 1	\$7.00
No. 5/0	\$15.00	No. 2	6.30
No. 4/0	13.00	No. 3	5.80
No. 3/0	10.00	No. 4	5.40
No. 2/0	8.80	No. 5	5.00
No. 0	7.50	No. 6	4.60

SWIVEL HOOK WITH MANILA ROPE THIMBLE

Galvanized and Black Wrought Iron



With Regular Eye

Stock No.
Galvanized.

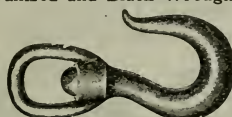
M 1224 H
M 1225 H
M 1227 H
M 1228 H
M 1229 H
M 1230 H

Diam. of
Iron in Hook,
inches.

$\frac{3}{8}$
 $\frac{1}{2}$
 $\frac{5}{8}$
 $\frac{3}{4}$
 $\frac{7}{8}$
1
 $1\frac{1}{4}$
 $1\frac{3}{8}$
 $1\frac{1}{2}$
 $1\frac{5}{8}$
 $1\frac{3}{4}$
 $1\frac{7}{8}$
2

SMALL EYE SWIVEL HOOK

Galvanized and Black Wrought Iron



For Blocks or Chain

Stock No.
Galvanized.

M 1324 H
M 1326 H
M 1327 H
M 1328 H
M 1329 H

Diam. of
Iron in Hook,
inches.

$\frac{1}{2}$
 $\frac{5}{8}$
 $\frac{3}{4}$
 $\frac{7}{8}$
1
 $1\frac{1}{4}$
 $1\frac{3}{8}$
 $1\frac{1}{2}$
 $1\frac{5}{8}$
 $1\frac{3}{4}$
 $1\frac{7}{8}$
2

SWIVEL HOOK WITH WIRE ROPE THIMBLE

Galvanized and Black Wrought Iron



With Small Eye

Diam. of
Iron in Hook,
inches.

$\frac{3}{8}$
 $\frac{1}{2}$
 $\frac{5}{8}$
 $\frac{3}{4}$

Diam. of
Iron in Hook,
inches.

$\frac{7}{8}$
1
 $1\frac{1}{4}$
 $1\frac{3}{8}$
 $1\frac{1}{2}$

Diam. of
Iron in Hook,
inches.

$\frac{5}{8}$
 $1\frac{1}{8}$
 $1\frac{3}{8}$
2

SMALL EYE SINGLE HOOK

Galvanized and Black Wrought Iron



Stock No.
Galvanized.

M 1214 H
M 1215 H
M 1216 H
M 1218 H
M 1220 H
M 1222 H
M 1223 H

Diam. of
Iron in Hook,
inches.

$\frac{1}{4}$
 $\frac{1}{2}$
 $\frac{3}{8}$
 $\frac{1}{2}$
 $\frac{5}{8}$
 $\frac{3}{4}$
 $\frac{7}{8}$

Length
of Hook,
inches.

$2\frac{1}{16}$
 $2\frac{1}{8}$
 $2\frac{5}{8}$
3
 $3\frac{3}{4}$
 $4\frac{5}{8}$
 $5\frac{1}{2}$
6
 $6\frac{1}{8}$
 $7\frac{7}{8}$
 $8\frac{3}{4}$
9
 $9\frac{1}{4}$
11
 $11\frac{1}{8}$
 $12\frac{1}{4}$
 $13\frac{1}{4}$
 $14\frac{1}{2}$

Inside
Diameter
of Eye,
inches.

$\frac{7}{16}$
 $\frac{5}{8}$
 $\frac{5}{8}$
 $\frac{3}{4}$
 $\frac{11}{16}$
1
 $1\frac{1}{4}$
 $1\frac{3}{8}$
 $1\frac{5}{8}$
 $1\frac{3}{4}$
 $1\frac{7}{8}$
 $2\frac{1}{16}$
 $2\frac{1}{4}$
 $2\frac{3}{8}$
 $2\frac{1}{2}$
 $2\frac{1}{2}$

ROUND EYE BOAT SNAP

Galvanized Malleable Iron and Polished Bronze



Stock Nos.

Galvanized.

Pol. Bronze.

M 1501 I M 1425 H
M 1502 I M 1426 H
M 1503 I M 1427 H
M 1504 I M 1428 H
M 1505 I M 1429 H
M 1506 I M 1430 H
M 1507 I M 1431 H

Inside
Diameter
of Eye,
inch.

$\frac{7}{8}$
 $\frac{5}{8}$
 $\frac{3}{4}$
 $\frac{7}{8}$
1
 $1\frac{1}{4}$
 $1\frac{1}{4}$

For
Diameter
Stay,
inch.

$\frac{1}{4}$
 $\frac{1}{8}$
 $\frac{3}{8}$
 $\frac{1}{2}$
 $\frac{3}{4}$
1
 $1\frac{1}{8}$

SWIVEL EYE SNAP HOOK

Galvanized Malleable Iron and Polished Bronze



Stock Nos.

Galvanized.

Pol. Bronze.

M 1632 H M 1432 H
M 1633 H M 1433 H
M 1634 H M 1434 H
M 1635 H M 1435 H
M 1636 H M 1436 H

Inside
Diameter
of Eye,
inch.

$\frac{5}{8}$
 $\frac{3}{4}$
 $\frac{7}{8}$
1
 $1\frac{1}{8}$

For
Diameter
Stay,
inch.

$\frac{1}{8}$
 $\frac{3}{8}$
 $\frac{1}{2}$
 $\frac{5}{8}$
 $\frac{7}{8}$

SISTER HOOKS WITH MANILA ROPE THIMBLES

Black and Galvanized Wrought Iron



Size of Iron inches*	Length inches	Diameter of Eye Inside inches	Size Score of Thimble inches	Gov't Test Maximum Strength in lbs.
1/4	2 3/8	3/8	3/8	940
5/16	2 1/2	1/2	1/2	1,420
3/8	3 1/8	1/2	1/2	2,030
1/2	3 3/8	1 1/8	5/8	3,800
5/8	4 1/2	1 1/4	7/8	7,100
3/4	5 1/4	1 1/2	1	8,920
7/8	6	1 3/4	1 1/8	11,020
1	6 1/2	2	1 1/4	11,100
1 1/8	7 1/8	2 1/8	1 3/8	13,050
1 1/4	7 3/4	2 3/8	1 3/4	19,200

SINGLE HOOK WITH MANILA ROPE THIMBLE

Black and Galvanized Wrought Iron



Size of Iron inches*	Length inches	Diameter of Eye Inside inches	Size Score of Thimble inches	Gov't Test Maximum Strength in lbs.
1/4	2	3/8	3/8	409
5/16	2 3/8	3/4	7/16	608
3/8	2 7/8	1/2	1/2	1,230
1/2	3 5/8	1/2	5/8	2,620
5/8	4 5/8	1 1/8	3/4	3,810
3/4	5 7/8	1 1/2	7/8	5,710
7/8	6 1/4	1 5/8	1	9,100
1	7	1 7/8	1 1/8	6,810
1 1/8	7 1/2	2	1 1/4	9,356
1 1/4	8 3/8	2 1/4	1 3/8	13,720

SISTER HOOKS WITH WIRE ROPE THIMBLES

Black and Galvanized Wrought Iron



Size of Iron inches*	Size Score of Thimble inches	Length of Hook inches	Diameter of Eye Inside inches	Gov't Test Maximum Strength in lbs.
1/4	1 1/8	2 1/2	1 1/8	940
5/16	1 1/4	2 3/8	5/8	1,420
3/8	1 5/8	2 7/8	1 1/8	2,030
1/2	1 7/8	3 1/2	7/8	3,800
5/8	1 1/2	4 1/8	1 1/8	7,100
3/4	5/8	5 1/8	1 3/8	8,920
7/8	3/4	5 3/4	1 1/4	11,020
1	7/8	6 3/8	1 3/8	11,100
1 1/8	1	6 1/2	1 5/8	13,050
1 1/4	1 1/8	7 1/4	1 3/4	19,200

SINGLE HOOK WITH WIRE ROPE THIMBLE

Black and Galvanized Wrought Iron



Size of Iron inches*	Size Score of Thimble inches	Length of Hook inches	Diameter of Eye Inside inches	Gov't Test Maximum Strength in lbs.
1/4	1 1/8	2	1/2	409
5/16	1 1/4	2 3/8	5/8	608
3/8	1 5/8	2 7/8	7/8	1,230
1/2	1 7/8	3 1/4	1	2,620
5/8	1 1/2	4	1 1/8	3,810
3/4	1 1/2	4 1/8	1 1/8	5,710
7/8	5/8	5 3/8	1 3/8	9,100
1	3/4	6 1/4	1 5/8	9,700
1 1/8	7/8	7	1 7/8	13,600
1 1/4	1	7 1/4	1 1/2	16,030

*Order by this size.

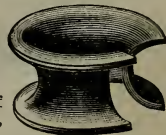
OPEN THIMBLES

Steel

3 1/4 to 8 inches, black, per lb., \$0.18; galvanized, per lb., \$0.20.

Measure across the hole in the Thimble from edge to edge.

The hole in the Thimble also score of the same, will usually equal one-half the diameter of the Thimble viz., a three inch Thimble will give a 1 1/2 inch score, and a hole about 1 1/2 inch diameter.



Outs. Dia. across Hole	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3
Width of Score.....	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	1 7/8	2
Black..... per doz.	\$0.26	\$0.26	\$0.26	\$0.28	\$0.30	\$0.32	\$0.34	\$0.40	\$0.55	\$0.80	\$0.95	\$1.20	\$1.40
Galvanized	“	.28	.28	.28	.30	.32	.34	.45	.60	.90	1.10	1.40	1.60

Fig. 67A
Anchor

SHACKLES

Drop Forged Steel with Round Pins for Blocks and
Derrick GuysFig. 67B
Chain

Prices			Dimensions of Anchor Shackle				Dimensions of Chain Shackle				
Size inches	Galvan- ized each	Japanned each	Length Inside inches	Width Between Eyes inches	Diameter of Pin inches	Estimated Weight per 100 in lbs.	Length Inside inches	Width Between Eyes inches	Diam- eter of Pin inches	Estimated Weight per 100 in lbs.	Gov't Test, Maximum Strength in pounds
1/4	\$0.25	\$0.23	1 7/8	1 1/2	1/8	12	1 1/8	1 1/2	1/8	12	5,510
1/2	.25	.23	1 1/4	1 1/8	3/8	19	1	1 1/8	3/8	18	8,320
3/8	.27	.25	1 3/8	1 1/4	7/8	31	1 3/4	1 5/8	7/8	29	10,890
7/8	.31	.29	1 3/4	1 1/2	1 1/2	48	1 7/8	1 1/2	1 1/2	46	15,200
1 1/2	.37	.33	1 7/8	1 3/4	1 5/8	70	1 5/8	1 1/2	1 5/8	68	18,390
1 3/4	.48	.41	2 3/8	1 7/8	1 3/4	136	2	1	1 3/4	118	33,400
2	.55	.45	2 3/4	1 3/8	1 3/4	220	2 7/8	1 3/8	1 3/4	200	43,400
2 1/2	.75	.60	3 3/8	1 3/8	1 3/4	340	2 7/8	1 3/8	1 3/4	296	55,200
3	1.10	.85	3 3/4	1 5/8	1 1/2	500	3 1/4	1 3/4	1 1/2	425	74,900
3 1/2	1.45	1.10	4 3/8	1 7/8	1 1/4	680	3 1/8	1 7/8	1 1/4	611	90,200
4	2.10	1.60	5	2	1 3/8	943	4	2	1 3/8	840	92,040
4 1/2	2.40	1.90	5 1/4	2 1/8	1 1/2	1,220	4 7/8	2 1/8	1 1/2	1,108	94,100
5	3.10	2.50	5 1/2	2 1/4	1 5/8	1,640	4 7/8	2 1/4	1 5/8	1,465	103,800
5 1/2	4.30	3.40	6 1/2	2 1/2	1 3/4	1,900	5 1/4	2 1/2	1 3/4	1,620	155,542
6	5.75	4.55	7	2 3/4	2	2,402	5 1/2	2 3/4	2	1,818	172,400
7	9.00	7.30	8	3 1/4	2 1/4	3,820	6 1/2	3 1/4	2 1/4	3,600	235,620

The above is government test. We recommend one-third of same for safe working load.

Fig. 66A
Screw Anchor
Shackle

SHACKLES

DROP FORGED STEEL WITH SCREWS

Fig. 66B
Screw Chain
Shackle

Prices			Dimensions of Anchor Shackle				Dimensions of Chain Shackle				
Size inches	Galvan- ized each	Japanned each	Length Inside inches	Width Between Eyes inches	Diameter of Pin inches	Estimated Weight per 100 in lbs.	Length Inside inches	Width Between Eyes inches	Diam- eter of Pin inches	Estimated Weight per 100 in lbs.	Gov't Test, Maximum Strength in pounds
1/8	\$0.25	\$0.23	7/8	3/8	1/4	6	7/8	3/8	1/4	6	3,080
1/4	.25	.23	1 1/8	1/2	1/8	12	1 1/8	1/2	1/8	11	5,510
1/2	.25	.23	1 1/4	1 1/8	3/8	18	1 1/8	1 1/8	3/8	17	8,320
3/8	.27	.25	1 3/8	1 1/4	7/8	31	1 3/4	1 1/8	7/8	28	10,890
7/8	.31	.29	1 3/4	1 1/2	1 1/2	48	1 7/8	1 1/2	1 1/2	41	15,200
1 1/2	.37	.33	1 7/8	1 3/4	1 5/8	68	1 5/8	1 1/2	1 5/8	68	18,390
1 3/4	.48	.44	2 3/8	1 7/8	1 3/4	136	2 1/8	1 3/8	1 3/4	121	33,400
2	.56	.46	2 3/4	1 3/8	1 3/4	214	2 1/8	1 3/8	1 3/4	201	43,400
2 1/2	.85	.68	3 3/8	1 3/8	1 3/4	343	2 7/8	1 3/8	1 3/4	300	55,200
3	1.20	.96	3 3/4	1 5/8	1 1/2	484	3 1/4	1 5/8	1 1/2	455	74,900
3 1/2	1.60	1.25	4 3/8	1 7/8	1 1/4	650	3 1/8	1 7/8	1 1/4	600	90,200
4	2.27	1.78	5	2	1 3/8	900	4	2	1 3/8	878	92,040
4 1/2	2.60	2.08	5 1/4	2 1/8	1 1/2	1,200	4 7/8	2 1/8	1 1/2	1,078	94,100
5	3.25	2.60	5 1/2	2 1/4	1 5/8	1,540	4 7/8	2 1/4	1 5/8	1,456	103,800
5 1/2	4.50	3.60	6 1/2	2 1/2	1 3/4	1,920	5 1/4	2 1/2	1 3/4	1,620	155,542
6	6.00	4.80	7	2 3/4	2	2,450	5 1/2	2 3/4	2	1,819	172,400
7	9.25	7.55	8	3 1/4	2 1/4	3,800	6 1/2	3 1/4	2 1/4	2,887	235,620

The above is government test. We recommend one-third of same for safe working load.

SWIVEL SHACKLE

Galvanized Iron, Drop Forged



Stock No. Galvanized	Size of Swivel inches	Length inches	Width Between Jaws inches	Size of Bow of Shackle inches
M 1117 H	$\frac{1}{4}$	$3\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4} \times \frac{3}{4}$
M 1118 H	$\frac{1}{8}$	$4\frac{1}{8}$	$\frac{1}{2}$	1 x1
M 1119 H	$\frac{3}{8}$	$4\frac{1}{2}$	$\frac{5}{8}$	$1\frac{1}{4} \times 1$
M 1120 H	$\frac{1}{2}$	$5\frac{5}{8}$	$\frac{3}{4}$	$1\frac{1}{2} \times 1\frac{1}{4}$
M 1121 H	$\frac{5}{8}$	7	1	$1\frac{3}{4} \times 1\frac{1}{2}$
M 1122 H	$\frac{3}{4}$	8	$1\frac{1}{8}$	2 x1 $\frac{3}{4}$
M 1123 H	$\frac{7}{8}$	9	$1\frac{1}{4}$	$2\frac{1}{4} \times 2$
M 1124 H	1	11	$1\frac{1}{2}$	$2\frac{1}{2} \times 2\frac{1}{2}$
M 1125 H	$1\frac{1}{8}$	12	$1\frac{5}{8}$	$2\frac{3}{4} \times 2\frac{1}{2}$
M 1126 H	$1\frac{1}{4}$	$13\frac{1}{2}$	$1\frac{3}{4}$	3 x2 $\frac{3}{4}$

HEAVY SWIVEL

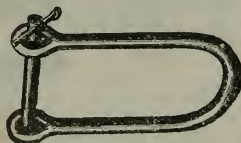
Galvanized, Drop Forged



Stock No.	Diameter of Iron inches	Length inches
M 1127 H	$\frac{3}{8}$	5
M 1128 H	$\frac{1}{2}$	$5\frac{1}{2}$
M 1129 H	$\frac{1}{2}$	6
M 1130 H	$\frac{3}{8}$	$7\frac{1}{2}$
M 1131 H	$\frac{3}{4}$	8
M 1132 H	$\frac{7}{8}$	9
M 1133 H	1	$10\frac{1}{2}$
M 1134 H	$1\frac{1}{8}$	$11\frac{1}{2}$
M 1135 H	$1\frac{1}{4}$	$12\frac{1}{2}$
M 1136 H	$1\frac{1}{2}$	$13\frac{1}{2}$

BOW SHACKLES

Galvanized Wrought Iron



Stock No.	Diameter of Iron, inch	Entire Length inches	Width in Clear inches
M 1758 H	$\frac{3}{8}$	5	$1\frac{3}{4}$
M 1760 H	$\frac{1}{2}$	6	$2\frac{1}{4}$
M 1762 H	$\frac{5}{8}$	7	3

LIGHT SWIVEL

Galvanized Malleable Iron and Brass



Galvanized	Stock Nos.	Brass	Length, inches
M 1234 H	M 1338 H		$1\frac{1}{2}$
M 1235 H	M 1339 H		2
M 1236 H	M 1340 H		$2\frac{1}{2}$
M 1237 H	M 1341 H		3
M 1238 H	M 1342 H		$3\frac{1}{2}$
M 1239 H	M 1343 H		5
M 1240 H	M 1344 H		6

THE "HARTZ" SAFETY
LINK HOOK

Diameter Hook.....	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$
Complete, each.....	\$1.00	\$1.25	\$1.50	\$2.00	\$2.25	\$2.50
Diameter Hook.....	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{5}{8}$	$1\frac{3}{4}$	$1\frac{7}{8}$	2
Complete, each.....	\$3.00	\$3.50	\$4.00	\$4.50	\$5.00	\$6.00

SCREW EYE BOLTS

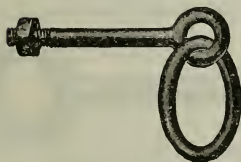
Galvanized Drop Forging



Stock No.	Size of Shank inch	Length under Eye, inches	Inside Diam. of Eye, inches
M 401 R	$\frac{1}{4}$	3	$\frac{1}{2}$
M 402 R	$\frac{5}{16}$	$2\frac{1}{4}$	$\frac{5}{8}$
M 403 R	$\frac{3}{8}$	$2\frac{1}{2}$	$\frac{3}{4}$
M 405 R	$\frac{1}{2}$	$3\frac{1}{4}$	1
M 407 R	$\frac{5}{8}$	4	$1\frac{1}{4}$
M 408 R	$\frac{3}{4}$	$4\frac{1}{2}$	$1\frac{1}{2}$
M 409 R	$\frac{7}{8}$	5	$1\frac{3}{4}$
M 410 R	1	6	2

NUT RING BOLTS

Galvanized Drop Forging



REGULAR LENGTH

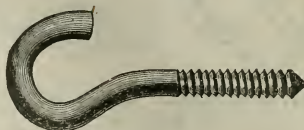
Stock No.	Size of Shank inch	Length under Eye, inches	Inside Diam. of Ring, inches
M 1401 R	$\frac{1}{4}$	2	$1\frac{1}{4}$
M 1402 R	$\frac{5}{16}$	$2\frac{1}{4}$	2
M 1403 R	$\frac{3}{8}$	$2\frac{1}{2}$	2
M 1405 R	$\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{1}{2}$
M 1407 R	$\frac{5}{8}$	4	$2\frac{3}{4}$
M 1408 R	$\frac{3}{4}$	$4\frac{1}{2}$	3
M 1409 R	$\frac{7}{8}$	5	$3\frac{1}{4}$
M 1410 R	1	6	$3\frac{3}{4}$

EXTRA LONG

Stock No.	Size of Shank inch	Length under Eye, inches	Inside Diam. of Ring, inches
M 1501 R	$\frac{1}{4}$	4	$1\frac{3}{4}$
M 1502 R	$\frac{5}{16}$	$4\frac{1}{4}$	2
M 1503 R	$\frac{3}{8}$	$4\frac{1}{2}$	2
M 1505 R	$\frac{1}{2}$	$5\frac{1}{4}$	$2\frac{1}{2}$
M 1507 R	$\frac{5}{8}$	6	$2\frac{3}{4}$
M 1508 R	$\frac{3}{4}$	$6\frac{1}{2}$	3
M 1509 R	$\frac{7}{8}$	8	$3\frac{1}{4}$
M 1510 R	1	9	$3\frac{3}{4}$

SCREW HOOKS

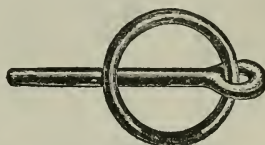
Galvanized Wrought Iron



Stock No.	Size of Shank inch	Extreme Length inches
M 301 R	$\frac{1}{4}$	4
M 302 R	$\frac{5}{16}$	$4\frac{1}{2}$
M 303 R	$\frac{3}{8}$	$4\frac{3}{4}$
M 305 R	$\frac{1}{2}$	$5\frac{3}{8}$
M 307 R	$\frac{5}{8}$	$6\frac{1}{4}$
M 308 R	$\frac{3}{4}$	$7\frac{1}{4}$
M 309 R	$\frac{7}{8}$	$8\frac{1}{8}$
M 310 R	1	$8\frac{1}{2}$

RING BOLTS TO RIVET

Galvanized Drop Forging

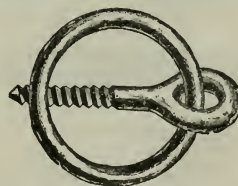


Stock No.	Size of Shank inch	Length under Eye, inches	Inside Diam. of Ring, inches
M 1601 R	$\frac{1}{4}$	4	$1\frac{1}{4}$
M 1602 R	$\frac{5}{16}$	$4\frac{1}{2}$	2
M 1603 R	$\frac{3}{8}$	$4\frac{1}{2}$	2
M 1605 R	$\frac{1}{2}$	$5\frac{1}{4}$	$2\frac{1}{2}$
M 1607 R	$\frac{5}{8}$	$5\frac{1}{2}$	$2\frac{3}{4}$
M 1608 R	$\frac{3}{4}$	6	3
M 1609 R	$\frac{7}{8}$	7	$3\frac{1}{4}$
M 1610 R	1	8	$3\frac{3}{4}$

Larger sizes and extra lengths furnished to order.

SCREW RING BOLT

Galvanized Drop Forging



Stock No.	Size Bolt inch	Length under Eye, inches	Inside Diam. of Ring, inches
M 1301 R	$\frac{1}{4}$	2	$1\frac{3}{4}$
M 1302 R	$\frac{5}{16}$	$2\frac{1}{4}$	2
M 1303 R	$\frac{3}{8}$	$2\frac{1}{2}$	2
M 1305 R	$\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{1}{2}$
M 1307 R	$\frac{5}{8}$	4	$2\frac{3}{4}$
M 1308 R	$\frac{3}{4}$	$4\frac{1}{2}$	3
M 1309 R	$\frac{7}{8}$	5	$3\frac{1}{4}$
M 1310 R	1	6	$3\frac{3}{4}$



Fig. 678

S HOOKS

Galvanized Wrought Iron

Size, Inches.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{5}{8}$
Length	$1\frac{1}{2}$	$1\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{5}{8}$	3	$3\frac{1}{2}$	4
Per Doz.....	\$0.35	\$0.40	\$0.50	\$0.75	\$1.00	\$1.25	\$1.60

SHOULDER SCREW EYE BOLT

Galvanized Drop Forging



Stock No.	Size of Shank inch	Length under Shoulder inches	Inside Diameter of Eye inches	Size of Iron in Eye, inch
M 901 R	$\frac{1}{4}$	2	$\frac{3}{8}$	$\frac{1}{8}$
M 902 R	$\frac{5}{16}$	$2\frac{1}{4}$	$\frac{7}{16}$	$\frac{1}{4}$
M 903 R	$\frac{3}{8}$	$2\frac{1}{2}$	$\frac{1}{2}$	$\frac{5}{16}$
M 905 R	$\frac{1}{2}$	$3\frac{1}{4}$	$\frac{3}{4}$	$\frac{3}{8}$
M 907 R	$\frac{5}{8}$	4	$\frac{7}{8}$	$\frac{1}{2}$
M 908 R	$\frac{3}{4}$	$4\frac{1}{2}$	$1\frac{1}{8}$	$\frac{9}{16}$
M 909 R	$\frac{7}{8}$	5	$1\frac{1}{4}$	$\frac{1}{16}$
M 910 R	1	6	$1\frac{3}{8}$	$\frac{3}{4}$

NUT EYE BOLT

Galvanized Drop Forging



REGULAR LENGTH

Stock No.	Size of Shank inch	Length under Eye inches	Inside Diam. of Eye, inches
M 501 R	$\frac{1}{4}$	2	$\frac{1}{2}$
M 502 R	$\frac{5}{16}$	$2\frac{1}{4}$	$\frac{5}{8}$
M 503 R	$\frac{3}{8}$	$2\frac{1}{2}$	$\frac{3}{4}$
M 505 R	$\frac{1}{2}$	$3\frac{1}{4}$	1
M 507 R	$\frac{5}{8}$	4	$1\frac{1}{4}$
M 508 R	$\frac{3}{4}$	$4\frac{1}{2}$	$1\frac{1}{2}$
M 510 R	1	6	2

EXTRA LONG

Stock No.	Size of Shank inch	Length under Eye inches	Inside Diam. of Eye, inches
M 601 R	$\frac{1}{4}$	4	$\frac{1}{2}$
M 602 R	$\frac{5}{16}$	$4\frac{1}{4}$	$\frac{5}{8}$
M 603 R	$\frac{3}{8}$	$4\frac{1}{2}$	$\frac{3}{4}$
M 605 R	$\frac{1}{2}$	$5\frac{1}{4}$	1
M 607 R	$\frac{5}{8}$	$5\frac{3}{4}$	$1\frac{1}{4}$
M 608 R	$\frac{3}{4}$	$6\frac{1}{2}$	$1\frac{1}{2}$
M 609 R	$\frac{7}{8}$	8	$1\frac{3}{4}$
M 610 R	1	9	2

NAVY SHOULDER EYE BOLT

Polished Bronze



Stock No.	Size of Shank inch	Length under Eye inches	Inside Diam. of Eye, inches
M 3201 R	$\frac{1}{4}$	$2\frac{1}{2}$	$\frac{1}{2}$
M 3202 R	$\frac{5}{16}$	3	$\frac{5}{8}$
M 3203 R	$\frac{3}{8}$	$3\frac{1}{2}$	$\frac{3}{4}$
M 3205 R	$\frac{1}{2}$	$4\frac{1}{2}$	1
M 3207 R	$\frac{5}{8}$	6	$1\frac{1}{4}$
M 3208 R	$\frac{3}{4}$	7	$1\frac{1}{2}$

RIVET EYE BOLT

Galvanized Drop Forging



REGULAR LENGTH

Stock No.	Size of Shank inch	Length under Eye inches	Inside Diam. of Eye, inches
M 1801 R	$\frac{1}{4}$	4	$\frac{1}{2}$
M 1802 R	$\frac{5}{16}$	$4\frac{1}{4}$	$\frac{5}{8}$
M 1803 R	$\frac{3}{8}$	$4\frac{1}{2}$	$\frac{3}{4}$
M 1805 R	$\frac{1}{2}$	$5\frac{1}{4}$	1
M 1807 R	$\frac{5}{8}$	$5\frac{1}{2}$	$1\frac{1}{4}$
M 1808 R	$\frac{3}{4}$	6	$1\frac{1}{2}$
M 1809 R	$\frac{7}{8}$	7	$1\frac{3}{4}$
M 1810 R	1	8	2

EXTRA LONG

Stock No.	Size of Shank inch	Length under Eye inches	Inside Diam. of Eye, inches
M 1901 R	$\frac{1}{4}$	8	$\frac{1}{2}$
M 1902 R	$\frac{5}{16}$	8	$\frac{5}{8}$
M 1903 R	$\frac{3}{8}$	8	$\frac{3}{4}$
M 1905 R	$\frac{1}{2}$	8	1
M 1907 R	$\frac{5}{8}$	14	$1\frac{1}{4}$
M 1908 R	$\frac{3}{4}$	14	$1\frac{1}{2}$
M 1909 R	$\frac{7}{8}$	12	$1\frac{3}{4}$
M 1910 R	1	12	2

Complete assortment of these goods in our Marine Catalog. If interested, send for it

TURNBUCKLES



Fig. M80

FORGED STEEL

Plain and Galvanized with Hook and Swivel Eye

Furnished with two eyes, two hooks, two shackles or shackle and eye if wanted.

*Diameter of Thread inches	Galvanized each	Self-colored each	Length in Clear Between Heads inches	Length of Buckle Outside inches	Estimated Weight Each lbs.
$\frac{3}{16}$	\$0.80	\$0.70	$3\frac{1}{2}$	$4\frac{1}{8}$	$\frac{1}{4}$
$\frac{1}{4}$	.85	.75	4	$4\frac{3}{4}$	$\frac{3}{8}$
$\frac{5}{16}$	.90	.80	$4\frac{1}{4}$	$5\frac{1}{4}$	$\frac{3}{8}$
$\frac{3}{8}$	1.10	.95	$4\frac{1}{2}$	$5\frac{3}{4}$	$\frac{5}{8}$
$\frac{7}{16}$	1.25	1.05	5	$6\frac{1}{4}$	1
$\frac{1}{2}$	1.50	1.30	6	$7\frac{1}{2}$	$1\frac{1}{2}$
$\frac{5}{8}$	1.85	1.65	$7\frac{1}{4}$	9	$2\frac{1}{4}$
$\frac{3}{4}$	2.20	1.75	$8\frac{1}{2}$	$10\frac{1}{2}$	$3\frac{1}{4}$
$\frac{7}{8}$	3.25	2.60	$9\frac{1}{4}$	$11\frac{3}{4}$	$4\frac{7}{8}$
1	4.25	3.60	10	12 $\frac{3}{4}$	$7\frac{3}{8}$
$1\frac{1}{8}$	5.50	4.75	11	14	$10\frac{1}{2}$
$1\frac{1}{4}$	6.75	5.50	12	$15\frac{1}{2}$	$15\frac{3}{4}$
$1\frac{3}{4}$	8.25	6.75	13	$16\frac{3}{4}$	21
$1\frac{7}{8}$	9.75	7.75	14	18	27
$1\frac{1}{2}$	12.00	9.50	15	$19\frac{1}{2}$	35
$1\frac{5}{8}$	15.00	13.00	16	21	
$1\frac{3}{4}$	20.00	17.00	18	23	
$1\frac{7}{8}$	25.00	22.00	18	23	
2	28.00	25.00	24	31	
$2\frac{1}{8}$	33.50	30.50	24	31	
$2\frac{1}{4}$	38.50	35.00	24	32	

*Order by this dimension.

Larger sizes furnished to order. Prices on receipt of specification.

PIPE TURNBUCKLES

FORGED STEEL



Fig. G230 With Shackle and Eye



Fig. G232 With Hook and Eye



Fig. G233 With Shackle and Shackle



Fig. G231 With Two Eyes

*Outside Diameter of Thread inches	Galvanized each	Length of Pipe inches	Estimated Weight Each lbs.
$\frac{3}{16}$	\$0.95	4	$\frac{1}{2}$
$\frac{1}{4}$	1.00	5	$\frac{5}{8}$
$\frac{5}{16}$	1.10	$5\frac{1}{4}$	$\frac{7}{8}$
$\frac{3}{8}$	1.30	6	$1\frac{1}{4}$
$\frac{7}{16}$	1.50	$6\frac{1}{2}$	$1\frac{7}{8}$
$\frac{1}{2}$	1.80	$7\frac{1}{2}$	$2\frac{1}{2}$
$\frac{5}{8}$	2.10	10	$3\frac{1}{4}$
$\frac{3}{4}$	2.40	$10\frac{1}{2}$	4 $\frac{3}{4}$

*Outside Diameter of Thread inches	Galvanized each	Length of Pipe inches	Estimated Weight Each lbs.
$\frac{3}{4}$	\$3.50	12	$7\frac{1}{4}$
$\frac{7}{8}$	4.25	13	11
1	5.50	15	16
$1\frac{1}{8}$	7.00	16	20
$1\frac{1}{4}$	8.25	16	
$1\frac{3}{8}$	10.00	18	
$1\frac{1}{2}$	12.00	18	
$1\frac{5}{8}$	15.00	18	

Larger sizes furnished to order. Prices upon receipt of specifications.

*Order by this dimension and give figure number.

Fig. 6S1A
Small

BARREL HOOKS

Wrought Iron

Size
Small
LargeGalvanized, per pair
\$0.85
1.00Blackd, per pair
\$0.75
.90Fig. 6S1B
Large

Fig. 6S1C

CAN HOOKS

Wrought Iron

Iron, diameter, inches.....	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$
Galvanized, per pair.....	\$0.65	\$0.80	\$1.00	\$1.25	\$1.75	\$2.25
Blackd, per pair.....	.60	.70	.85	1.10	1.50	2.00

CHAIN HOOKS

Wrought Iron



Length inches	Galvanized Size of iron inches	Each
24	$\frac{3}{8}$	\$0.50
26	$\frac{1}{2}$	.75
28	$\frac{5}{8}$	1.00

Length inches	Blackd Size of iron inches	Each
24	$\frac{3}{8}$	\$0.45
26	$\frac{1}{2}$	.70
28	$\frac{5}{8}$	.90

SINGLE NAVY BOAT HOOK

Galvanized Malleable Iron and Polished Bronze



Galvanized	Stock Nos. Polished Bronze	For Pole Diameter inches
M 1101 K	M 1305 K	1
M 1103 K	M 1306 K	$1\frac{1}{4}$
M 1105 K	M 1307 K	$1\frac{1}{2}$
M 1107 K	M 1308 K	2

SHARP POINT BOAT HOOK

Galvanized Malleable Iron and Polished Bronze



Galvanized	Stock Nos. Polished Bronze	For Pole Diameter inches
M 1201 K	M 1301 K	1
M 1203 K	M 1302 K	$1\frac{1}{4}$
M 1205 K	M 1303 K	$1\frac{1}{2}$
M 1207 K	M 1304 K	2

BOAT HOOK HANDLES

Varnished Fir



Stock No.	Length feet
M 1102 J	4
M 1105 J	5
M 1107 J	6
M 3104 J	7

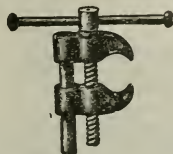
Stock No.	Length feet
M 3204 J	8
M 3304 J	9
M 3405 J	10
M 3404 J	12

RIGGER SCREWS AND LOBSTER CLAWS



For Manila Rope

Size	Diameter of Screw, inches	Price each
No. 0	1 1/2	\$8.50
No. 1	1 1/4	4.50
No. 2	1 1/8	3.75
No. 3	1	2.75
No. 4	7/8	2.50



Lobster Claw

Size	Diameter of Screw, inches	Price each
No. 1	1 1/4	\$3.50
No. 2	1	3.25
No. 3	7/8	3.00



For Wire Rope

Size	Diameter of Screw, inches	Price each
No. 0	1 1/2	\$9.00
No. 1	1 1/4	6.25
No. 2	1 1/8	4.75
No. 3	1	3.50
No. 4	7/8	2.75
No. 5	3/4	2.25

State whether for Manila or Wire Rope

MARLINE SPIKES

Tempered Steel



Fig. 680C

Length.....	inches	6	8	9	10	11	12	13	14	15	16	18
Japanned.....	per dozen	\$1.75	\$2.00	\$2.60	\$3.00	\$3.25	\$3.50	\$4.00	\$5.00	\$5.50	\$6.50	\$8.50
Polished.....	" "	3.00	3.50	3.75	4.00	4.50	5.00	5.50	6.50	7.50	9.50	11.50

WIRE ROPE MARLINE SPIKES—Tool Steel, Polished



Fig. 68D

Length.....	inches	12	14	16	18	20
Per dozen		\$16.00	\$18.00	\$21.00	\$24.00	\$27.00



GUY GRIPPER OR "COME-A-LONG"

A guy can be tightened in one-eighth the time usually consumed by old fashioned methods. Positively cannot slip, for the harder the strain, the tighter the grip.

	No. 1	No. 2	No. 3	No. 4
For wire rope.....	7/8 inch and smaller	1 to 1 1/8 inch	1 1/2 inch	2 inch
Price, each.....	\$10.00	\$12.00	\$16.00	\$24.00

Always give size of rope gripper is to be used on.

CAULKING IRONS

CAST STEEL



Fig. 676A

	G. B. C. & Co's	Drew's
Caulking Irons, No. 0 Crease, $\frac{1}{8}$ inch thick	Dozen \$4.50	Dozen \$8.00
" " No. 1 " (or making) $\frac{1}{8}$ inch thick.	4.65	8.00
" " No. 2 " " $\frac{3}{16}$ " "	4.75	8.00
" " No. 3 " " $\frac{1}{4}$ " "	4.85	8.00
Deck or Dumb Irons	5.25	9.00
Crooked or Bent Irons	5.25	9.50
Double Bent Irons	5.75	10.00
Spike Irons	5.00	8.00
Sharp or Butt Irons	6.00	10.00
Clearing or Reefing Irons	5.25	9.00
Reed's Boat Builders' Irons, $\frac{3}{8}$ inch thick	3.00	7.00
Klondike Boat Builders' Irons, $\frac{3}{8}$ inch thick	3.00	7.00
" " " " $\frac{1}{2}$ " "	3.25	7.00
" " " " $\frac{1}{2}$ " "	3.50	7.00

HAWSING BEETLES

WROUGHT RINGS

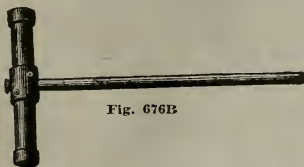


Fig. 676B

Live Oak, extra	per dozen	\$22.00
White Oak	"	17.50
Handles only	"	3.50

HAWSING IRONS

SOLID STEEL

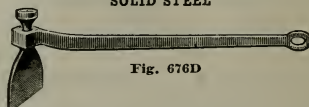


Fig. 676D

	Regular $\frac{3}{8}$ or $\frac{1}{4}$ inch thick, per dozen	Bent $\frac{3}{8}$ or $\frac{3}{4}$ inch thick, per dozen	Per dozen
Blades Polished ...	\$20.00	\$22.50	\$25.00
Blades Blacked	15.00	17.50	20.00

We always send $\frac{1}{4}$ inch thick unless otherwise ordered.

CAULKING MALLETS

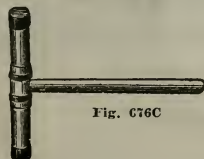


Fig. 676C

No. 000. Live Oak, tempered Steel Rings, doz.	\$30.00
No. 00. " " " " " "	23.00
No. 0. " polished " " " "	25.00
No. 1. " " " " " "	22.00
No. 5. " Iron Rings	18.00
No. 8. White Oak " "	12.00

DECK PLUGS

Price Per Thousand

	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$
White Pine....	\$1.50	\$1.50	\$1.50	\$2.00	\$2.00	\$2.00	\$2.50
Oak	2.00	2.00	2.00	2.50	2.50	2.50	3.00
Mahogany.....	2.50	2.50	2.50	3.00	3.00	3.00	3.50

SHIP SCRAPERS

Tempered Steel Blades, Galvanized Sockets



Fig. 676E

No. 1. Blade $\frac{1}{4}$ inch thick	\$7.50
" 2. " " $\frac{3}{8}$ " "	4.50
" 3. " " $2\frac{1}{2}$ inches square	5.00

YACHT OR BOAT

Fig. 676F
OvalFig. 676G
Triangular

Oval, 5 inch long; blade, $2\frac{1}{4}$ x 1 inch.	\$3.50
Triangular, " " " 2 x 2 " "	3.50

YACHT SPAR

Fig. 676H
Triangular

Triangular or Curved	Per doz \$6.00
----------------------------	----------------

JEFFERY'S SPECIAL MARINE CANOE GLUE

Guaranteed to Be Waterproof



Its peculiar properties are those of flexibility and durability, and although it becomes soft and pliant under heat, it still retains its adhesion to timber, fiber, etc., and is clean and insoluble in water.

No canoeist should be without a can of

this Glue; it is invaluable for quick repairs on either canvas or cedar canoes.

In cans of..(emergency) 1 lb. 2 lb. 5 lb.

For temporary repairs only a candle is needed. Dig out a piece of glue as large as required, mold it in the hand after greasing with the candle, melt the face of the glue and apply to the hole.

No. 1. BLACK, WHITE OR YELLOW YACHT GLUE Extra Quality

For Deck and Hull Seams of Yachts and Boats.

In cans of 1 lb., 2 lbs., and 5 lbs.

In bulk, packed in wooden cases containing: 14 lbs., 28 lbs., 56 lbs., and 112 lbs.

No. 2. BLACK OR YELLOW SHIP GLUE First Quality.

For Deck and Hull Seams of All Classes of Vessels.

In bulk, packed in wooden cases containing: 14 lbs., 28 lbs., 56 lbs., and 112 lbs.

No. 7. BLACK GLUE Soft Quality

Used largely by manufacturers of knock-down boats.

Also used in combination with canvas for decks and canvas boats and canoes, and in combination with calico for sponsons.

It is invaluable for quick repairs.

In cans of 1 lb., 2 lbs., and 5 lbs.

In bulk, packed in cases containing: 14 lbs., 28 lbs., 56 lbs., and 112 lbs.

No. 10. BLACK GLUE Soft Quality

Very elastic, especially recommended for joining hollow spars.

In cans of 1 lb.

LePAGE'S LIQUID GLUE

In Tin Cans

Half pints, packed 2 dozen in box.

Pints, packed 1 dozen in box.

Quarts, packed 1 dozen in box.

Half gallon cans, packed ½ dozen in box.

Gallon cans, packed ½ dozen in box.



In Bottles

Small size, 1 doz. in box, packed in gross and ½ gross cases.

Large size, 1 doz. in box, packed in gross and ½ gross cases.

WATERPROOF LIQUID MARINE GLUE

"C" QUALITY

Ready for use. For attaching canvas, felt, oilcloth, rubber, leather or linoleum to iron, steel or wood, rendering same absolutely waterproof.

In applying can should be placed in hot water if glue is too thick to work freely. Spread glue over the surface with a stiff brush after which canvas or other material can be laid over glue and a warm flat iron passed over same to smooth out wrinkles and make perfect contact.

1 gal. will cover about 10 ¾ square yards.

MARINE GLUE THINNER

Thinning should be used sparingly in the same manner as a carpenter adds a little water to animal glue when it becomes too hard or brittle.

Put up in cans of ½ pint, 1 pint, 1 quart, ½ gallon and 1 gallon.

INLAND LAKE CUSHION LAC

An elastic, durable finish for dressing up leather, pantasote, etc., restoring the color and lustre the leather originally had. It is waterproof and is warranted not to crack leather or pantasote. Dries in 15 minutes so that the cushion can be used shortly after being coated without danger of either sticking or softening. It is a leather preservative, and is made in the following colors: Black, red, brown, dark, green, blue and transparent.

Put up in cans of ¼ pint, ½ pint, 1 pint, 1 quart, ½ gallon, and 1 gallon.

USEFUL INFORMATION
WATER

Doubling the diameter of a pipe increases its capacity four times. Friction of liquids in pipes increases as the square of the velocity.

To find the pressure in pounds per square inch of a column of water, multiply the height of the column in feet by .434. Approximately, we say that every foot elevation is equal to $\frac{1}{2}$ pound pressure per square inch; this allows for ordinary friction.

To find the diameter of a pump cylinder to remove a given quantity of water per minute (100 feet of piston being the standard of speed), divide the number of gallons by 4, then extract the square root, and the product will be the diameter in inches of the pump cylinder.

To find quantity of water elevated in one minute, running at 100 feet of piston speed per minute, square the diameter of the water cylinder in inches, and multiply by 4.

Example—Capacity of a 5 inch cylinder is desired. The square of the diameter (5 inches) is 25, which, multiplied by 4, gives 100, the number of gallons per minute (approximately).

To find the horse-power necessary to elevate water to a given height, multiply the weight of the water elevated per minute in pounds by the height in feet, and divide the product by 33,000 (an allowance should be added for water friction, and a further allowance for loss in steam cylinder, say from 20 to 30 per cent).

The area of the steam piston, multiplied by the steam pressure, gives the total amount of pressure that can be exerted. The area of the water piston, multiplied by the pressure of water per square inch, gives the resistance. A margin must be made between the power and the resistance to move the pistons at the required speed, say from 20 to 40 per cent, according to speed and other conditions.

To find the capacity of a cylinder in gallons, multiply the area in inches by the length of stroke in inches, will give the total number of cubic inches; divide this amount by 231 (which is the cubical contents of a U. S. gallon in inches), and product is the capacity in gallons.

ELECTRICAL UNITS

Volt—The unit of electrical motive force. Force required to send one ampere of current through one ohm of resistance.

Ohm—Unit of resistance. The resistance offered to the passage of one ampere, when impelled by one volt.

Ampere—Unit of current. The current which one volt can send through a resistance of one ohm.

Coulomb—Unit of quantity. Quantity of current which, impelled by one volt, would pass through one ohm in one second.

Farad—Unit of capacity. A conductor or condenser which will hold one coulomb under the pressure of one volt.

Joule—Unit of work. The work done by one watt in one second.

Watt—The unit of electrical energy, and is the product of ampere and volt. That is, one ampere of current flowing under a pressure of one volt gives one watt of energy.

One electrical horse-power is equal to 746 watts.

One Kilowatt is equal to 1,000 watts.

To find the watts consumed in a given electrical circuit, such as a lamp, multiply the volts by the amperes.

To find the volts, divide the watts by the amperes.

To find the amperes, divide the watts by the volts.

To find the electrical horse-power required by a lamp, divide the watts of the lamp by 746.

To find the number of lamps that can be supplied by one electrical horse-power of energy, divide 746 by the watts of the lamp.

To find the electrical horse-power necessary, multiply the watts per lamp by the number of lamps, and divide by 746.

To find the mechanical horse-power necessary to generate the required electrical horse-power, divide the latter by the efficiency of the generator.

To find the amperes of a given circuit, of which the volts and ohms resistance are known, divide the volts by the ohms.

To find the volts, when the amperes and watts are known, multiply the amperes by the ohms.

To find the resistance in ohms, when the volts and amperes are known, divide the volts by the amperes.

STEAM

Saturated Steam—Steam at a given temperature is said to be saturated when it is of maximum density for that temperature. Steam in contact with water is saturated steam.

Wet or Supersaturated Steam—Steam which has water (in the form of small drops) suspended in it is called wet or supersaturated steam. If wet steam be heated until all the water in it is evaporated, it is said to be dried.

Superheated Steam—If dry saturated steam be heated when not in contact with water, its temperature is raised and its density diminished or its pressure is raised. The steam is then said to be superheated.

Dryness Fraction of Steam—Let W = weight of a given quantity of wet steam, w = weight of water suspended in this steam, then dryness fraction = $\frac{W-w}{W}$.

Under ordinary conditions and good stoking, the dryness fraction is about 95 per cent.

Properties of Saturated Steam—Nearly all published tables giving the properties of saturated steam have been constructed on empirical formulae based on the researches of Regnault. The table below has been prepared with great care after comparing the tables given by Clark, Cotterill, Dwellshauvers-Dent, Marfariane, Gray, Peabody, Thurston, Weisbach and others. The temperature it was first decided upon by a system of averaging and plotting, H was then calculated from the formulae, $H=1081.94 + 305t$.

The quantity $t-h$ was next determined in the same way as t was found, and this decided the value of h . Then, $L = H-h$. w was next determined, and then $v = \frac{1}{w}$.

The quantities H , h and L are for one pound weight of steam or water.

p = absolute pressure or pressure above a perfect vacuum, in pounds per square inch.

t = temperature in degrees Fahrenheit.

H = total heat in steam above that in water at 32°.

h = heat in water (at t°) above that in water at 32°.

L = latent heat or heat of vaporization = $H-h$.

w = weight of one cubic foot of steam in pounds.

v = volume of one pound weight of steam in cubic feet = $\frac{1}{w}$.

Quantities of heat are expressed in British thermal units.

A British Thermal Unit is the amount of heat necessary to raise the temperature of one pound of water 1° F., when the water is at its greatest density, namely, from 39° to 40° F.

USEFUL INFORMATION

WEIGHTS OF VARIOUS SUBSTANCES PER CUBIC FOOT

Names of Substances	Average Weight, lbs.	Names of Substances	Average Weight, lbs.
Anthracite, solid, of Pennsylvania.....	93	Lime, quick, ground, loose, per struck bushel.....	66
Anthracite, broken, loose.....	58	Limestones and Marbles.....	168
Anthracite, broken, moderately shaken.....	58	Limestones and Marbles, loose, in irregular fragments.....	96
Anthracite, heaped bushel, loose.....	(80)	Mahogany, Spanish, dry.....	53
Ash, American white, dry.....	38	Mahogany, Honduras, dry.....	35
Asphaltum.....	87	Maple, dry.....	35
Brass (copper and zinc), cast.....	524	Marbles, see Limestones.....	168
Brass, rolled.....	504	Masonry, of granite or limestone, well dressed.....	145
Brick, best pressed.....	150	Masonry, of mortar rubble.....	154
Brick, common hard.....	125	Masonry, of dry rubble (well scabbled).....	138
Brick, soft, inferior.....	100	Masonry, of sandstone, well dressed.....	144
Brickwork, pressed brick.....	140	Mercury, at 32° Fahrenheit.....	849
Brickwork, ordinary.....	112	Mica.....	183
Cement, hydraulic, ground, loose, American, Rosendale.....	56	Montmorillonite.....	103
Cement, hydraulic, ground, loose, American, Louisville.....	50	Mud, dry, close.....	80 to 110
Cement, hydraulic, ground, loose, English, Portland.....	90	Mud, wet, fluid, maximum.....	120
Cherry, dry.....	42	Oak, live, dry.....	59
Chestnut, dry.....	41	Oak, white, dry.....	52
Coal, bituminous, solid.....	87	Oak, other kinds.....	32 to 45
Coal, bituminous, broken, loose.....	87	Petroleum.....	55
Coal, bituminous, heaped bushel, loose.....	(74)	Pine, white, dry.....	25
Coke, loose, of good coal.....	27	Pine, yellow, Northern.....	34
Coke, loose, heaped bushel.....	(38)	Pine, yellow, Southern.....	45
Copper, cast.....	542	Platinum.....	1342
Copper, rolled.....	548	Quartz, common, pure.....	165
Earth, common loam, dry, loose.....	76	Rosin.....	69
Earth, common loam, dry, moderately rammed.....	95	Salt, coarse, Syracuse, N. Y.....	45
Earth, as a soft flowing mud.....	108	Salt, Liverpool, fine, for table use.....	49
Ebony, dry.....	76	Sand, of pure quartz, dry, loose.....	90 to 106
Elm, dry.....	35	Sand, well shaken.....	99 to 117
Flint.....	162	Sand, perfectly wet.....	120 to 140
Glass, common window.....	157	Sandstones, fit for building.....	151
Gneiss, common.....	168	Shales, red or black.....	162
Gold, cast, pure or 24 carat.....	1204	Silver.....	655
Gold, pure, hammered.....	1217	Slate.....	175
Granite.....	170	Snow, freshly fallen.....	5 to 10
Gravel, about the same as sand, which see.....		Snow, moistened and compacted by rain.....	15 to 50
Hemlock, dry.....	25	Spruce, dry.....	25
Hickory, dry.....	53	Steel.....	490
Hornblende, black.....	203	Sulphur.....	125
Iron.....	58.7	Sycamore, dry.....	37
Iron, cast.....	480	Tar.....	62
Iron, wrought, purest.....	485	Tin, cast.....	459
Iron, wrought, average.....	480	Turf or peat, dry, unpressed.....	20 to 30
Ivory.....	114	Walnut, black, dry.....	38
Lead.....	711	Water, pure rain or distilled, at 60° Fahrenheit.....	62½
Lignum Vitæ, dry.....	83	Water, sea.....	64
Lime, quick, ground, loose or in small lumps.....	53	Wax, bees.....	60.5
Lime, quick, ground, loose, thoroughly shaken.....	75	Zinc or Spelter.....	437
		Green timbers usually weigh from one-fifth to one-half more than dry.....	

MELTING POINT OF METALS

Name	Fahr.	Fahr.	Authority
Platina.....	4593		
Antimony.....	955	842	J. Lowthian Bell
Bismuth.....	487	507	"
Tin (average).....	475		"
Lead (average).....	622	620	"
Zinc.....	772	782	"
Cast Iron.....	2010	{ 1922 2012 White } Pouillet	
Wrought Iron.....	2910	{ 2012 2192 Gray } " "	
Steel.....	2370	2733	Welding Heat
Copper (average).....	2174	2550	

GENERAL RULES FOR DETERMINING THE WEIGHT OF ANY PIECE OF WROUGHT IRON

One cubic foot of wrought iron..... = 480 lbs.
 One square foot, one inch thick..... = $480 \div 12 = 40$ lbs.
 One square inch, one foot long..... = $40 \div 12 = 3\frac{1}{3}$ lbs.
 One square inch, one yard long..... = $3\frac{1}{3} \times 3 = 10$ lbs.
 Hence, the weight of any piece of wrought iron in pounds per yard is equal to 10 times its area in inches.

Example—The area of a bar $3" \times 1" = 3$ square inches, and its weight is 30 lbs. per yard.

For round iron the weight per foot may be found by taking the diameter in quarter inches, squaring it, and dividing by 6.

Example—What is the weight of 2 inch round iron? **Example**—What is the weight of $\frac{3}{4}"$ round iron?
 $2^2 = 8$ quarter inches. $8 \div 6 = 1\frac{1}{3}$.
 $\frac{3}{4}^2 = \frac{9}{16}$ quarter inches. $\frac{9}{16} \div 6 = \frac{3}{32}$.
 $\frac{3}{32} \times 16 = 1\frac{1}{2}$ lbs. per foot of 2" round. $\frac{3}{32} \times 32 = 3$ lbs. per foot of $\frac{3}{4}"$ round.

USEFUL INFORMATION

RULES FOR FINDING THE HORSEPOWER OF AN ENGINE

Problem—What is the horse-power of an engine whose piston is 12 inches in diameter, stroke 16 inches, revolutions 140 per minute, mean steam pressure 30 lbs. per inch on piston?

Rule 1—Multiply the area of piston's square inches by the mean pressure per square inch, then multiply this product by the speed of the piston in feet per minute, then divide this last product by 33,000 foot pounds per horsepower.

Example—Diameter of piston 12 inches. Multiply by itself $12 \times 12 = 144$ square inches of piston. Reduce this to square inches of area by multiplying $144 \times .7854$ ($.7854 \times 10000$) = 113.0976 square inches of area, then multiply this by mean pressure on piston, 30 lbs., $113.0976 \times 30 = 3392.928$ lbs. total pressure on piston, then multiply this product by speed of piston, 373.3 feet per minute = 1266580.0224. Now divide this by 33,000 foot pounds per horse-power = 38.3 horse-power which this engine will generate with the steam pressure and speed given.

Rule 2—Multiply the square of the piston's diameter in inches by stroke in inches. Multiply resultant by revolutions per minute. Then multiply this product by 4. Now point off 5 figures from the right and multiply by the mean pressure in lbs., the final product is the horse-power of an engine.

Example—Square inches of piston's diameter is $144 \times$ by stroke 16 inches = 2304. This \times by revolutions per minute $140 = 322,560$, resultant \times by 4 = 1,290,240 which \times by mean pressure 30 lbs. = 38,706,000 horse-power of engine. This rule is correct within $\frac{1}{4}$ of a horse-power in 100.

Rule 3—Multiply the square of piston's diameter in inches by mean pressure in lbs. Multiply the product by twice the stroke in feet. Multiply resultant by revolutions per minute. Then multiply this product by constant .238, the final resultant will be the horse-power.

Example—Square inches of piston $144 \times$ by mean pressure 30 = 4,320 \times by twice the stroke in feet $2 \times 16 = 11,520 \times$ by revolutions $140 = 1,612,800 \times$ by constant .238 = 38.38 horse-power of engine. The constant, .238, is found by dividing .7854 by 33,000 foot pounds.

Rule 4—Multiply the area of piston by mean pressure. This product by the stroke in inches. Multiply resultant by 2. Again multiply by the revolutions per minute. Then divide product by 12, and divide final resultant by 33,000, the quotient will be the horse-power of engine.

Example—Area of piston $113.0976 \times$ by mean pressure 30 = 3392.928 \times by stroke 16 inches = 54288.6848 \times by 2 = 108577.3696 \times by revolutions per minute, $140 = 15,200,831.744 \div$ by 12 = 1,266,736.1473 \div 33,000 = 38.38 horse-power of engine. In the foregoing rules no allowance is made for the piston-rod, which, if so accounted for, would slightly reduce the horse-power in each example.

To find the side contents of an equal square, multiply its diameter by .8862.

TO FIND THE HORSE-POWER OF SHAFTING

To find horse-power of a shaft, multiply the cube of its diameter in inches by the revolutions per minute, and divide product by 82 for steel or 110 for iron shafting. **Example.** Diameter of shaft, 2 inches; revolutions, 160; then $2^3 \times 160 = 1280 \div 82 = 14.4$ horse-power, or $2^3 \times 160 = 1280 \div 110 = 11.6$ horse-power of iron shaft.

FLY WHEEL

To find the weight of the rim of the fly wheel for an engine: Nominal H. P. $\times 200 \div$ the square of the velocity of the circumference in feet per second = weight in cwt.

RELATIVE VALUE OF HEATING SURFACE

Horizontal surfaces above the flame equal.....1.00
Vertical surfaces above the flame equal......50
Horizontal surfaces beneath the flame......10
Tubes and flues equal $1\frac{1}{4}$ times their diameter.
Convex surfaces above the flame equal 1% diameter.

FEED WATER REQUIRED BY SMALL ENGINES

Gauge Pressure at Boiler	Pounds Water per Effective H. P. per hour	Gauge Pressure at Boiler	Pounds Water per Effective H. P. per Hour
10	118	60	75
15	111	70	71
20	105	80	68
25	100	90	65
30	93	100	63
40	84	120	61
50	79	150	58

TO DERIVE WEIGHT OF IRON

The average weight of wrought iron is 480 lbs. per cubic foot.

To find the sectional area, given the weight per foot:—

Multiply by $\frac{16}{7}$.

To find the weight per foot, given the sectional area:—

Multiply by $\frac{7}{16}$.

For round iron the weight per foot may be figured by taking the diameter in $\frac{1}{4}$ inches; square it and divide it by 6.

Example—What is weight per foot of 2 inch round iron?

2 inches = 8 quarter-inches. $8 \times 8 = 64$ $64 \div 6 = 10\frac{2}{3}$ lbs. per foot.

Example—What is weight per foot of $\frac{3}{4}$ inch round iron?

$\frac{3}{4}$ inch = 3 quarter inches. $3 \times 3 = 9$ $9 \div 6 = 1\frac{1}{2}$ lbs. per foot.

Steel weighs 2% heavier than wrought iron.

USEFUL INFORMATION

HORSE POWER OF TURNED SHAFTING—(Kent)

As second movers or line shafting, bearings eight feet apart.

$$\text{Formula: } H. P. = \frac{D^2 \times R}{90}$$

Diameter of Shaft	Number of Revolutions Per Minute										
	100	125	150	175	200	225	250	275	300	325	250
1	6.	7.4	8.9	10.4	11.9	13.4	14.9	16.4	17.9	19.4	20.9
1 1/8	8.9	11.1	13.3	15.5	17.7	20.	22.2	24.4	26.6	28.8	31.
1 1/4	12.6	15.8	19.	22.	25.	28.	31.	35.	38.	41.	44.
1 1/2	17.	21.	26.	30.	34.	39.	43.	47.	52.	56.	60.
1 3/4	23.	29.	34.	40.	46.	52.	58.	64.	69.	75.	81.
2	30.	37.	45.	52.	60.	67.	75.	82.	90.	97.	105.
2 1/4	38.	47.	57.	66.	76.	85.	95.	104.	114.	123.	133.
2 1/2	47.	59.	71.	83.	95.	107.	119.	131.	143.	155.	165.
2 3/4	58.	73.	88.	102.	117.	132.	146.	162.	176.	190.	205.
3	71.	89.	107.	125.	142.	160.	178.	196.	213.	231.	249.

HORSE POWER OF TURNED SHAFTING—(Kent)

As prime mover or head shaft carrying main driving pulley or gear, well supported by bearings.

$$\text{Formula: } H. P. = \frac{D^2 \times R}{125}$$

Diameter of Shaft	Number of Revolutions Per Minute										
	60	80	100	125	150	175	200	225	250	275	300
1 in.	2.6	3.4	4.3	5.4	6.4	7.5	8.6	9.7	10.7	11.8	12.9
1 1/8 in.	3.8	5.1	6.4	8.	9.6	11.2	12.3	14.4	16.	17.6	19.2
1 1/4 in.	5.4	7.3	8.1	10.	12.	14.	16.	18.	20.	22.	24.
1 1/2 in.	7.5	10.	12.5	15.	18.	22.	25.	28.	31.	34.	37.
1 3/4 in.	10.	13.	16.	20.	24.	28.	32.	36.	40.	44.	48.
2 in.	13.	17.	20.	25.	30.	35.	40.	45.	50.	55.	60.
2 1/4 in.	16.	22.	27.	34.	40.	47.	54.	61.	67.	74.	81.
2 1/2 in.	20.	27.	34.	42.	51.	59.	68.	76.	85.	93.	102.
2 3/4 in.	30.	41.	51.	64.	76.	89.	102.	115.	127.	140.	153.
3 in.	43.	58.	72.	90.	108.	126.	144.	162.	180.	198.	216.
3 1/4 in.	60.	80.	100.	125.	150.	175.	200.	225.	250.	275.	300.
3 1/2 in.	80.	106.	133.	166.	199.	233.	266.	299.	333.	366.	400.

SPEED OF GRAIN ELEVATOR BELTS

Size of Head Pulley, Diameter, inches	Speed of Belt, feet per minute	Revolutions Per Minute of Head Shaft	Size of Head Pulley, Diameter, inches	Speed of Belt, feet per minute	Revolutions Per Minute of Head Shaft
24	250 to 300	40 to 48	54	425 to 450	30 to 32
30	300 to 350	38 to 44	60	475 to 500	30 to 32
36	350 to 375	37 to 40	72	575 to 600	30 to 32
42	375 to 400	34 to 36	84	625 to 650	28 to 30
48	400 to 425	32 to 34			

TEE-RAILS AND TRACK EQUIPMENT

RAILS, SPLICES, SPIKES AND BOLTS

For Single Track, (Two Rails), Ties 2 Feet Center to Center, 4 Spikes Each

Size of Rails, pounds, per yard.....	8	12	16	20	25	30	40
Rails, per mile, tons of 2,000 pounds.....	14.08	21.12	28.16	35.20	44.00	52.80	70.40
Rails, per 100 feet, pounds.....	533	800	1,067	1,333	1,667	2,000	2,667
Splice bars, weight, per pair, pounds.....	21	34.4	43.6	4.86	5.70	10.45	16.10
Splikes, size under head, inches.....	2x2 1/2	3/4x2 1/2	3/4x3	3/4x3 1/2	3/4x3 1/2	1/2x4	1/2x4 1/2
Splikes, per mile, pounds.....	978	1,320	1,542	1,790	1,790	3,520	3,985
Splikes, per 100 feet, pounds.....	19	25	30	33	33	67	76
Splikes, per ton rails, pounds.....	70	63	55	51	41	67	56
Splikes, number per keg of 200 pounds.....	2,160	1,600	1,270	1,180	1,180	600	530
Bolts, size, inches.....	3/4x1 1/2	3/4x1 1/2	3/4x1 1/2	3/4x2			
Bolts, number per keg of 200 pounds.....	1,800	1,800	1,560				

NEAREST NUMBER OF RAILS, SPLICES AND BOLTS

For Single Track (2 Rails)

Length of Rails, feet.....	12	13	14	15	16	18	20	22	24	30
Per 100 feet, number of rails.....	17	15	14	13	12	11	10	9	8	7
Per 100 feet, pairs splices.....	17	15	14	13	12	11	10	9	8	7
Per 100, number bolts, 4 per joint.....	68	60	56	52	48	44	40	36	32	28
Per 100, number bolts, 2 per joint.....	34	30	28	26	24	22	20	18	16	14
Per mile, number rails.....	880	813	755	704	660	578	528	480	440	352
Per mile, pairs splices.....	880	813	755	704	660	578	528	480	440	352
Per mile, number bolts, 4 per joint.....	3,520	3,252	3,020	2,816	2,640	2,312	2,112	1,920	1,760	1,408
Per mile, number bolts, 2 per joint.....	1,760	1,626	1,510	1,408	1,320	1,156	1,056	960	880	704
8-pound rails, number, per ton.....	62.5	57.7	53.6	50.0	46.9	41.7	37.5	34.1	31.3	25.0
12-pound rails, number, per ton.....	41.7	38.5	35.7	33.3	31.3	27.8	25.0	22.8	20.8	16.7
16-pound rails, number, per ton.....	31.3	28.9	26.8	25.0	23.4	20.8	18.8	17.1	15.6	12.5
20-pound rails, number, per ton.....	25.0	23.1	21.4	20.0	18.8	16.7	15.0	13.6	12.5	10.0
25-pound rails, number, per ton.....	20.0	18.6	17.1	16.0	15.0	13.3	12.0	10.9	9.1	8.0
30-pound rails, number, per ton.....	16.7	15.4	14.3	13.3	12.5	11.1	10.0	9.1	8.3	6.7
40-pound rails, number, per ton.....	12.5	11.5	10.7	10.0	9.3	8.3	7.5	6.8	6.3	5.0

USEFUL INFORMATION

TO TEMPER STEEL ON ONE EDGE ONLY

Dip the edge to be tempered into hot lead until proper color; then temper in ordinary fashion.

TO DRILL HARDENED STEEL

Cover your steel with melted beeswax; when coated and cold, make a hole in the wax with a fine-pointed needle or other article the size of hole you require, put a drop of strong nitric acid upon it; after an hour rinse off and apply again; it will gradually eat through.

A mixture of 1 ounce of sulphate of copper, $\frac{1}{4}$ ounce of alum, $\frac{1}{2}$ teaspoonful of powdered salt, 1 gill of vinegar and 20 drops of nitric acid will make a hole in steel that is too hard to cut or file easily.

A small hole drilled at the end of a crack in sheet steel will stop it from growing longer.

ANNEALING STEEL

For small pieces of steel, take a piece of gas pipe, 2 or 3 inches in diameter, and put the pieces in it, first heating one end of the pipe, and drawing it together, leaving the other end open to look into. When the pieces are of cherry red, cover the fire with dust, use a charcoal fire, and leave the steel in over night.

IN TURNING STEEL OR OTHER HARD METAL

Use a drip composed of petroleum two parts and turpentine one part. This will insure easy cutting and perfect tools when otherwise the work would stop, owing to the breakage of tools from the severe strain.

TEMPERING RECIPES

Resin, 2 pounds; tallow, 2 pounds; pitch, 1 pound. Melt together and dip the hot steel in it.

Salt, $\frac{1}{2}$ cupful; saltpetre, $\frac{1}{2}$ ounce; alum, pulverized, 1 teaspoonful; soft water, 9 gallons. Never heat above a cherry red or draw any temper.

By melting together 1 gallon spermacetti oil, 2 pounds tallow and $\frac{1}{4}$ pound wax, a mixture is obtained very convenient for tempering any kind of steel article of small size. Adding 1 pound resin makes it suitable for larger articles.

TO HARDEN GRAVERS

Heat in charcoal dust (not too hot), and plunge into a box of wet, yellow soap. This renders the end of the graver very hard and very tough.

Strong sal soda water or soapy water is much better than clean water to use where water cuts are being taken, either on lathe or planer. When cutting brass, sweet milk is recommended as being better than either the foregoing.

TENSILE STRENGTH OF MATERIALS

Average Value in Pounds per Square Inch

Antimony	1053
Aluminum—castings	15000
Aluminum—sheet	24000
Aluminum—bars	28000
Brass—yellow	26850
Bronze—cast—Lunkenheimer	34000
Bronze—delta metal—cast	44800
Bronze—delta metal—rolled	67200
Bronze—gun metal	32000
Bronze—phosphor	40000
Bronze—manganese	62720
Bronze—Tobin	78500
Copper—cast	22400
Copper—sheet	30240
Copper—wire	40000
Cast Steel—Lunkenheimer	80000
Gold	20384
Iron—cast—Lunkenheimer	25000
Iron—cast	18000
Iron—wrought	45000
Lead—cast	1800
Lead—rolled sheet	3320
Platinum wire	53000

"Puddled" Semi-steel—Lunkenheimer.	35000 to 42000
Silver—cast	40000
Steel—cast	60000 to 80000
Steel—forgings	60000 to 95000
Tin—cast	3860
Zinc—cast	3350
Zinc—sheet	15680

WOODS

Ash	11000 to 17000
Beech	11500 to 18000
Cedar	10300 to 11400
Chestnut	10500
Elm	13000 to 13489
Hemlock	8700
Hickory	12800 to 18000
Locust	20500 to 24800
Maple	10500 to 10584
Oak—white	10253 to 19500
Pine—white	10000 to 12000
Pine—yellow	12600 to 19200
Spruce	10000 to 19500
Walnut—black	9286 to 16000

USEFUL INFORMATION SQUARE OR LAND MEASURE

United States and British

Square Miles	Acres	Square Rods	Square Yards	Square Feet	Square Inches
1	640.	102400.	3097600.	27878400.	.....
....	1.	160.	4840.	43560.	6272640.
....	....	1.	30.25	272.25	39204.
....	....	0.0331	1.	9.0	1296.
....	....	.....	0.111	1.	144.
....	....	.....	.....	0.00694	1.

Acres \times .0015625 = square miles.

Square yards \times .00000325 = square miles.

Acres \times .4840 = square yards.

Square yards \times .0002066 = acres.

A section of land is 1 mile square and contains 640 acres.

A square acre is 208.71 feet at each side, or 220 \times 198 feet.

A square $\frac{1}{2}$ acre is 147.58 feet at each side, or 110 \times 193 feet.

A square $\frac{1}{4}$ acre is 104.355 feet at each side, or 55 \times 198 feet.

A circular acre is 235.504 feet in diameter.

A circular $\frac{1}{2}$ acre is 166.527 feet in diameter.

A circular $\frac{1}{4}$ acre is 117.752 feet in diameter.

CUBIC OR SOLID MEASURE

United States and British

1728 cubic inches = 1 cubic foot.

27 cubic feet = 1 cubic yard.

A cord of wood = 4' \times 4' \times 8' = 128 cubic feet.

A perch of masonry = 16.5' \times 1.5' \times 1' = 24.75 cubic feet, but is generally assumed at 25 cubic feet.

LIQUID MEASURE

This measure is founded upon the old British wine gallon, which contained 231 cubic inches of distilled water at a temperature of 39.85° Fahrenheit, the barometer standing at 30 inches.

4 gills = 1 pint.

2 pints = 1 quart.

4 quarts = 1 gallon.

2 barrels = 1 hogshead.

2 hogsheads = 1 pipe, or butt.

2 pipes = 1 tun.

3 $\frac{1}{2}$ gallons = 1 barrel.

A puncheon is 84 gallons.

A tierce is 42 gallons.

NAUTICAL MEASURE

A nautical or sea mile (a knot) is the length of a minute of longitude of the earth at the equator at the level of the sea. It is assumed = 6086.07 feet = 1.152664 statute or land miles by the United States coast survey.

3 nautical miles = 1 league.

DRY MEASURE

United States Only

Struck Bushel	Pecks	Quarts	Pints	Gallons	Cubic Inches
1	4	32.	64	8.	2150.
..	1	8.	16	2.	537.6
..	..	1.	2	0.25	67.2
..	..	0.5	1	0.125	33.6
..	..	4.	8	1.	268.8

A gallon of liquid measure = 231 cubic inches.

A heaped bushel = 1 $\frac{1}{4}$ struck bushels. The cone in a heaped bushel must not be less than 6 inches high.

A barrel of U. S. hydraulic cement = 300 to 310 lbs., usually, and of genuine Portland cement = 425 lbs.

To reduce U. S. dry measures to British imperial of the same name, divide by 1.032.

THE SIZE OF BOLT HEADS, NUTS AND WASHERS

Diameter of bolt = 1.

Diameter of the head and nut, square or hexagon = 1 $\frac{1}{4}$ from side to side.

Diameter of head and nut, hexagon = 2 over the angles.

Thickness of head = $\frac{3}{4}$ of diameter of bolt.

Thickness of nut = 1 $\frac{1}{8}$ of diameter of bolt.

Washers should equal half the thickness of the head, and have twice the area.

Approximately—The weight of a hexagon head and square nut together will equal a rod of iron in length five times the diameter of the bolt;

For square heads and nuts, six times the diameter;

And for rose heads and square nuts, four times the diameter.

RIVETS

Diameter of rivet for plates less than $\frac{1}{2}$ inch thick = twice the thickness of the plate.

Diameter of rivets for plates $\frac{1}{2}$ inch thick and upwards = once and a half the thickness of the plate.

Length of rivet measured before clinching = the thickness of the plate - 2 $\frac{1}{2}$ times the diameter of the rivet.

SHRINKAGE OF CASTINGS

In locomotive cylinders is $\frac{1}{16}$ inch in a foot.

Pipes is $\frac{1}{8}$ inch in a foot.

Girders, beams, etc., is $\frac{1}{8}$ inch in 15 inches.

Engine beams, connecting rods, etc., is $\frac{1}{8}$ inch in 16 inches.

Large cylinders, say 70 inch diameter, 10 foot stroke, the contraction of diameter is $\frac{3}{8}$ inch at top, $\frac{1}{2}$ inch at bottom, and $\frac{3}{8}$ inch in 16 inches in length.

Thin brass is $\frac{1}{8}$ inch in 9 inches.

Thick brass is $\frac{1}{8}$ inch in 10 inches.

Zinc is $\frac{1}{8}$ inch in a foot.

Lead is $\frac{1}{8}$ inch in a foot.

Copper is $\frac{1}{8}$ inch in a foot.

Bismuth is $\frac{1}{8}$ inch in a foot.

Tin is $\frac{1}{8}$ inch in a foot.

USEFUL INFORMATION

Diameter of a circle $\times 3.1416$ = circumference.Diameter of a circle $\times .8862$ = side of an equal square.Diameter of a circle $\times .7071$ = side of an inscribed square.Square of a diameter $\times .7854$ = area of circle.Circumference of a circle $\times .31831$ = diameter.Side of a square $\times 1.128$ = diameter of equal circle.Square root of an area $\times 1.12837$ = diameter of equal circle.Square of the diameter of a sphere $\times 3.1416$ = convex surface.Cube of the diameter of a sphere $\times .5236$ = solidity.Diameter of a sphere $\times .806$ = dimensions of equal cube.Diameter of a sphere $\times .6667$ = length of equal cylinder.Square inches $\times .00695$ = square feet.Cubic inches $\times .00058$ = cubic feet.Cubic feet $\times .03704$ = cubic yards.Cylindrical inches $\times .0004548$ = cubic feet.Cylindrical feet $\times .02909$ = cubic yards.Cubic inches $\times .003607$ = imperial gallons.Cubic feet $\times .6232$ = imperial gallons.Cylindrical inches $\times .002832$ = imperial gallons.Cylindrical feet $\times 4.895$ = imperial gallons.

153.346 circular inches = 1 square foot.

2,200 cylindrical inches = 1 cubic foot.

Avoirdupois pounds $\times .009$ = cwt.Avoirdupois pounds $\times .00045$ = tons.Lineal feet $\times .00019$ = statute miles.Lineal yards $\times .000568$ = statute miles.

To find the pressure in pounds per square inch of a column of water, multiply height of column in feet by .434.

Doubling the diameter of a circle increases its area four times.

Area of a triangle = base multiplied by half the altitude.

Area of a sector of a circle = one-half the length of the arc multiplied by the radius of the circle.

To find the capacity (U. S. gallons) of cylindrical tanks, square the diameter expressed in inches, multiply by the length and by .0034.

VOLUME OF AIR DISCHARGED THROUGH A ROUND ORIFICE IN RECEIVER INTO ATMOSPHERIC PRESSURE

Given in Cubic Feet of Free Air Per Minute
RECEIVER GAUGE PRESSURE

Diam. Orifice Inches	2 lbs.	5 lbs.	10 lbs.	15 lbs.	20 lbs.	30 lbs.	40 lbs.	50 lbs.	60 lbs.	70 lbs.	80 lbs.	90 lbs.
$\frac{1}{8}$	.04	.05	.08	.10	.12	.15	.19	.22	.26	.29	.33	.36
$\frac{1}{4}$	.15	.24	.34	.41	.48	.63	.77	.91	1.05	1.19	1.33	1.47
$\frac{3}{8}$	.64	.96	1.36	1.67	1.93	2.52	3.07	3.64	4.20	4.76	5.32	5.87
$\frac{1}{2}$	2.43	3.86	5.45	6.65	7.70	10.00	12.27	14.50	16.80	19.00	21.20	23.50
$\frac{5}{8}$	9.74	15.40	21.80	26.70	30.80	40.00	49.09	58.20	67.00	76.00	85.00	94.00
$\frac{3}{4}$	21.95	34.60	49.00	60.00	69.00	90.00	110.45	130.00	151.00	171.00	191.00	211.00
$\frac{7}{8}$	39.00	61.60	87.00	107.00	123.00	161.00	196.35	232.00	268.00	304.00	340.00	376.00
$\frac{1}{1}$	61.00	96.50	136.00	167.00	193.00	252.00	306.80	364.00	420.00	476.00	532.00	587.00
$\frac{1}{1}$	87.60	133.00	196.00	240.00	277.00	362.00	441.79	522.00	604.00	685.00	765.00	843.00
$\frac{1}{1}$	119.50	189.00	267.00	326.00	378.00	493.00	601.32	722.00	840.00	950.00	1064.00	
1	156.00	247.00	350.00	427.00	494.00	645.00	785.40	930.00				
1 $\frac{1}{8}$	242.00	384.00	543.00	665.00	770.00	1000.00						
1 $\frac{1}{4}$	350.00	550.00	780.00	960.00								
2	625.00	985.00										

USEFUL INFORMATION FOR CONTRACTORS

One-fifth more siding and flooring is needed than the number of square feet of surface to be covered because of the lap in siding and flooring.

One thousand laths will cover seventy yards of surface and eleven pounds of lath nails will nail them on.

Eight bushels of good lime, sixteen bushels of sand and one bushel of hair will make enough good mortar to plaster 100 square yards.

One cord of stone, three bushels of lime and a cubic yard of sand will lay 100 cubic feet of wall.

Cement, one bushel, and sand, two bushels, will cover $3\frac{1}{2}$ square yards, 1 inch thick; $4\frac{1}{2}$ square yards, $\frac{3}{4}$ inch thick; and 6 $\frac{1}{2}$ square yards, $\frac{1}{2}$ inch thick.

One bushel of cement and one bushel of sand will cover 2 $\frac{1}{2}$ square yards, 1 inch thick; 3 square yards, $\frac{3}{4}$ inch thick; and $4\frac{1}{2}$ square yards, $\frac{1}{2}$ inch thick.

AMOUNT OF PAINT REQUIRED FOR A GIVEN SURFACE

It is impossible to give a rule that will apply in all cases, as the amount varies with the kind and the thickness of the paint, the kind of wood or other material to which it is applied, the age of the surface, etc. The following is an approximate rule: Divide the number of square feet of surface by 200. The result will be the number of gallons of liquid paint required to give two coats; or divide by 18 and the result will be the number of pounds of pure ground white lead required to give three coats.

ROOF ELEVATIONS

By the "pitch" of a roof is meant the relation which the height of the ridge above the level of the roof-plates bears to the span, or the distance between the studs on which the roof rests.

The length of rafters for the most common pitches can be found as follows from any given span:

If $\frac{1}{4}$ pitch, multiply span by .559 or $\frac{1}{2}$ nearly. If $\frac{1}{2}$ pitch, multiply span by .71 or $\frac{3}{4}$ nearly.

If $\frac{3}{4}$ pitch, multiply span by .8 or $\frac{3}{4}$ nearly. If full pitch, multiply span by .8 or $\frac{3}{4}$ nearly.

If $\frac{1}{2}$ pitch, multiply span by .625 or $\frac{1}{2}$ nearly. If full pitch, multiply span by $\frac{1}{2}$ or 1 $\frac{1}{8}$ nearly.

To length thus obtained must be added amount of projections of rafters at the eaves.

As rafters must be purchased of even lengths, a few inches more or less on their lengths will make a difference to the pitch so slight that it cannot be detected by the eye.

Example.—To determine the length of rafters for a roof constructed one-half pitch, with a span of 24 feet: $24 \times .71 = 17.04$, or, practically, just 17 feet. A projection of one foot for eaves makes the length to be purchased 18 feet.

USEFUL INFORMATION

AVOIRDUPOIS WEIGHT

Drachms	1 oz.=437.5 grains troy.
16=	1 lb.=1,215.3 lbs. troy.
256=	1 lb.=1,215.3 lbs. troy.
6,400=	400=25=1 quarter.
25,600=	1,600=100=4=1 cwt.
512,000=	32,000=2,000=80=20=1 ton.

TROY WEIGHT

Grains	24=1 dwt.
480=	20=1 oz.
5,760=240=12=	1 lb.=22.816 cubic inches of distilled water at 62° Fahr.

DRY MEASURE

Pints=	3.6 cubic inches.
2=	1 quart=67.2 cubic inches.
8=	4=1 gallon=268.8 cubic inches.
16=	8=2=1 peck=537.6 cubic inches.
64=	32=8=4=1 bushel.
Note.—The standard U. S. bushel is the Winchester bushel, which is in cylinder form, 18½ inches in diameter and 8 inches deep, and contains 2150.42 cubic inches.	

SQUARE MEASURE

Inches	144=1 foot.
1,296=	9=1 yard.
39,204=	272.25=30.25=1 perch.
1,568,160=	10,890=1,210=40=1 rood.
6,272,640=	43,560=4,340=160=4=1 acre.
An acre is 69,570.1 yards per square; or, 208.710321 feet square.	
A township is 6 miles square=36 sections.	
A section is 1 mile square=640 acres.	
A section is ¼ mile square=160 acres.	
A section is ¼ mile square=40 acres.	
A span is the distance that can be reached between the end of the middle finger and the end of the thumb. Among sailors 8 spans are equal to 1 thumb.	
A geographic mile is ½ ¹⁰⁰⁰ of the distance around the center of the earth.	
A square mile of land is called a section.	
A Gunter's chain, used by land surveyors, is 4 rods, or 66 feet long, and consists of 100 links. 7.92 inches make a link.	
Canal and railroad engineers use an engineer's chain, which consists of 100 links, each 1 foot long.	

PAPER MEASURE

Quire of paper.....	24 sheets.
Ream of paper.....	20 quires, or 480 sheets.
Bundle.....	2 reams.
Bale.....	5 bundles.
Roll of parchment.....	60 skins.

Sheet of paper folded into—

2 leaves is termed folio size.
4 leaves is termed 4to. or quarto.
8 leaves is termed 8vo. or octavo.
12 leaves is termed 12mo. or duodecimo.
16 leaves is termed 16mo.
18 leaves is termed 18mo.
24 leaves is termed 24mo.
48 leaves is termed 48mo.

TABLE OF LENGTHS AND WEIGHTS AND THEIR APPROXIMATE EQUIVALENTS IN THE METRIC SYSTEM

LENGTH

1 meter.....	=39.37 inches.
1 inch.....	=2.54 centimeters.
1 foot (twelve inches).....	=30.48 centimeters.
2 inches.....	=5.08 centimeters.
4 inches.....	=10.16 centimeters.
3 inches.....	=7.62 centimeters.
12 inches (one foot).....	=30.48 centimeters.
16 inches.....	=40.64 centimeters.
20 inches.....	=50.80 centimeters.
4 feet.....	=1.22 meters.
8 feet.....	=2.438 meters.
12 feet.....	=3.658 meters.

APOTHECARIES' WEIGHT

Grains	20=1 scruple or ʒ
60=	3=1 drachm or ʒ
480=	24=3=1 oz. or ʒ
5,760=288=96=12=	1 lb.

APOTHECARIES' MEASURE

60 minims.....	=1 fluid-drachm.
8 fluid-drachms.....	=1 fluid-ounce.
16 fluid-ounces.....	=1 pint.
8 pints.....	=1 gallon.

Forty-five drops, or a common teaspoonful, make about 1 fluid-drachm; 2 tablespoonsful, about 1 fluid-ounce; a wineglassful, about 1½ fluid-ounces; and a teacupful, about 4 fluid-ounces.

LIQUID OR WINE MEASURE

Gills=	7.2187 cubic inches.
4=	1 pint=28.875 cubic inches.
8=	2=1 quart=57.75 cubic inches.
32=	8=4=1 gallon.
2,016=	404=252=63=1 hoghead.
4,032=	1,008=504=126=2=1 pipe.
8,064=	2,016=1,008=252=4=2=1 ton.

Note.—The standard unit and liquid measure adopted by the U. S. Government is the Winchester wine gallon, which contains 231 cubic inches, and holds 8.339 pounds, avoirdupois, of distilled water, at its maximum density weighed in air, the barometer being at 30 inches.

The imperial gallon, adopted by Great Britain, contains 277.274 cubic inches, and equals 1.20032 U. S. gallons.

The following cylinders contain some of these measures very closely:

Gill, diameter, 1½ inches; height, 3 inches.
Pint, diameter, 3½ inches; height, 3 inches.
Quart, diameter, 3½ inches; height, 6 inches.
Gallon, diameter, 7 inches; height, 6 inches.
8 gallon, diameter, 14 inches; height, 12 inches.
10 gallon, diameter, 14 inches; height, 15 inches.

WEIGHT OF WATER

1 cubic inch.....	=.03617 pounds.
12 cubic inches.....	=.434 pounds.
1 cubic foot.....	=7.48052 U. S. gallons.
1 U. S. gallon.....	=8.35 pounds.
1.8 cubic feet.....	=2.240 pounds.
2,240 pounds.....	=268.8 U. S. gallons.

LIQUID WEIGHT

1 gallon distilled water.....	10
1 gallon sea water.....	10.32
1 gallon proof spirits.....	9.08

WEIGHT OF OILS

1 gallon sperm.....	7½
1 gallon whale.....	7½
1 gallon lard.....	7½
1 gallon tallow.....	7½
1 gallon neat's-foot.....	7½
1 gallon paraffine, 28° gravity.....	7½
1 gallon paraffine, 25° gravity.....	7½
1 gallon reduced Franklin.....	7½
1 gallon castor.....	8
1 gallon kerosene.....	6½

WEIGHT

1 pound.....	=453.592 grams=	.4536 kilograms.
1 gram.....	=.03527 ounce.	
100 pounds.....	=45.36 kilograms.	
1 kilogram.....	=2.2046 pounds.	
25 pounds.....	=11.34 kilograms.	
100 pounds.....	=45.36 kilograms.	

USEFUL INFORMATION

STRENGTH OF BOLTS, STAYS AND SUSPENSION RODS

U. S. Standard—At Reduced Area

Diam. of Bolt	Area of Bolt	Diam. at Root of Thread	Reduced Area	No. of Thread per inch	Tensile Strength per Square Inch						
					6,000 lbs.	7,000 lbs.	7,500 lbs.	8,000 lbs.	9,000 lbs.	10,000 lbs.	12,000 lbs.
$\frac{1}{4}$	.04909	.185	.0269	20	161	188	201	215	242	269	322
$\frac{1}{8}$	.0767	.240	.0452	18	271	316	339	361	406	452	542
$\frac{3}{16}$	.11045	.294	.0678	16	406	474	478	542	610	678	813
$\frac{1}{2}$	.15033	.344	.0930	14	558	651	697	744	837	930	1,116
$\frac{5}{8}$	.19635	.400	.1257	13	754	879	943	1,005	1,131	1,257	1,508
$\frac{3}{4}$	.2485	.454	.1619	12	971	1,133	1,214	1,295	1,457	1,619	1,942
$\frac{7}{8}$	.30679	.507	.2019	11	1,211	1,413	1,514	1,615	1,817	2,019	2,422
1	.44178	.620	.3019	10	1,811	2,113	2,384	2,415	2,717	3,019	3,622
$1\frac{1}{8}$	.60132	.731	.4197	9	2,518	2,937	3,147	3,357	3,777	4,197	5,036
$1\frac{1}{4}$	.7854	.837	.5502	8	3,301	3,851	4,126	4,401	4,951	5,502	6,602
$1\frac{1}{2}$	.99402	.940	.6940	7	4,164	4,858	5,205	5,552	6,246	6,940	8,328
$1\frac{3}{4}$	1.2271	1.065	.8908	7	5,344	6,235	6,681	7,126	8,017	8,908	10,689
$1\frac{7}{8}$	1.4848	1.160	1.0568	6	6,340	7,397	7,926	8,454	9,511	10,568	12,681
2	1.7671	1.284	1.2958	6	7,770	9,065	9,712	10,360	11,655	12,950	15,540
$2\frac{1}{8}$	2.0739	1.389	1.5152	$5\frac{1}{2}$	9,091	10,606	11,364	12,121	13,636	15,152	18,182
$2\frac{1}{4}$	2.4052	1.491	1.7460	5	10,476	12,222	13,095	13,968	15,714	17,460	20,952
$2\frac{3}{8}$	2.7611	1.616	2.0510	5	12,306	14,357	15,380	16,408	18,459	20,510	24,612
$2\frac{1}{2}$	3.1416	1.712	2.3020	$4\frac{1}{2}$	13,812	16,114	17,265	18,416	20,718	23,020	27,624
$2\frac{3}{4}$	3.976	1.962	3.0235	$4\frac{1}{2}$	18,141	21,164	22,676	24,188	27,211	30,235	36,282
3	4.9087	2.176	3.7187	4	22,312	26,030	27,890	29,749	33,468	37,187	44,624
$3\frac{1}{8}$	5.9395	2.426	4.6225	4	27,735	32,357	34,668	36,980	41,602	46,225	55,470
$3\frac{1}{4}$	7.0686	2.629	5.4284	$3\frac{1}{2}$	32,570	37,998	40,713	43,427	48,855	54,284	65,140
$3\frac{3}{8}$	8.2957	2.879	6.5099	$3\frac{1}{2}$	39,059	45,569	48,824	52,079	58,589	65,099	78,118
$3\frac{1}{2}$	9.6211	3.100	7.5477	$3\frac{1}{4}$	45,286	52,833	56,607	60,381	67,929	75,477	90,572
$3\frac{3}{4}$	11.0446	3.317	8.6413	3	51,847	60,489	64,809	69,130	77,771	86,413	103,695
4	12.5664	3.567	9.9930	3	59,958	69,957	74,947	79,944	89,937	99,930	119,916
$4\frac{1}{4}$	14.1862	3.798	11.3292	$2\frac{3}{4}$	67,975	79,304	84,969	90,633	101,963	113,292	135,950
$4\frac{1}{2}$	15.9043	4.028	12.7429	$2\frac{3}{4}$	76,457	89,200	95,571	101,943	114,686	127,429	152,914

SHEARING AND BEARING VALUE OF RIVETS

Diameter-rivet				Single Shear in lbs.	All Dimensions in Inches															
Inches		Area Sq. in.			Bearing value in pounds per square inch for different thickness plate															
Frac.	Dec.				$\frac{3}{4}$	$\frac{5}{16}$	$\frac{3}{4}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{3}{4}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{3}{4}$	$\frac{15}{16}$	1 in.			
$\frac{3}{8}$	.375	.1104		660	1130	1410	1690												
$\frac{1}{2}$	.50	.1963		1180	1500	1880	2550	2630	3000										
$\frac{5}{8}$	.625	.3063	6000	1840	12000	1880	2340	2810	3280	3750									
$\frac{3}{4}$	.75	.4418		2650	lbs.	2250	2810	3380	3940	4500	5060	5630	6190	6750					
$\frac{7}{8}$	.875	.6013		3610		2630	3280	3940	4590	5250	5910	6560	7220	7880	8530	9190			
1 in.	1.00	.7854		4710		3000	3750	4500	5250	6000	6750	7500	8250	9000	9750	10500				
$\frac{3}{8}$	.375	.1104		830		1410	1760	2110											
$\frac{1}{2}$	.50	.1963		1470		1880	2340	2810	3280	3750									
$\frac{5}{8}$	.625	.3063	7500	2300	15000	2340	2930	3520	4100	4690	5280	5860							
$\frac{3}{4}$	.75	.4418		3310	lbs.	2810	3520	4220	4920	5630	6330	7030	7720	8440	9160				
$\frac{7}{8}$	.875	.6013		4510		3280	4100	4920	5740	6560	7380	8200	9020	9850	11670	11480			
1 in.	1.00	.7854		5890		3750	4690	5620	6560	7500	8440	9380	10310	11250	12190	13130				
$\frac{3}{8}$	.375	.1104		1100		1880	2340	2810											
$\frac{1}{2}$	.50	.1963		1960		2500	3130	3750	4380	5000									
$\frac{5}{8}$	.625	.3063	10000	3070	20000	3130	3910	4690	5470	6250	7030	7810							
$\frac{3}{4}$	.75	.4418		4420	lbs.	3750	4690	5630	6560	7500	8440	9380	10310	11250					
$\frac{7}{8}$	.875	.6013		6010		4380	5470	6570	7660	8750	9840	10940	12030	13130	14220	15310			
1 in.	1.00	.7854		7850		5000	6250	7500	8750	10000	11250	12500	13750	15000	16250	17500				
$\frac{3}{8}$	.375	.1104		1320		2350	2930	3520											
$\frac{1}{2}$	.50	.1963		2360		3130	3910	4690											
$\frac{5}{8}$	.625	.3063	12000	3680	25000	3910	4880	5860	6840	7810	8790	9770	10750	11730	12710	13690			
$\frac{3}{4}$	.75	.4418		5300	lbs.	4690	5860	7030	8210	9380	10550	11720	12890	14060					
$\frac{7}{8}$	.875	.6013		7220		5470	7840	8210	9580	10940	12310	13670	15040	16410	17770	19140			
1 in.	1.00	.7854		9430		6250	7820	9280	10940	12500	14060	15630	17190	18750	20320	21880				

THE SPEED OF DRILLS

A feed per revolution of .004 to .007 for drills $\frac{1}{4}$ inch and smaller, and from .007 to .015 for larger is about all that should be required.

This feed is based on a peripheral speed of a drill equal to:

30 feet per minute for steel; 35 feet per minute for iron; 60 feet per minute for brass.

It may also be found advisable to vary the speed somewhat according as the material to be drilled is more or less refractory.

We believe that these speeds should not be exceeded under ordinary circumstances.

Table of Cutting Speeds

Ft. per Minute	15 ft.	20 ft.	25 ft.	30 ft.	35 ft.	40 ft.	45 ft.	50 ft.	60 ft.	70 ft.	80 ft.
Diam. in.	REVOLUTIONS PER MINUTE										
1/16	917.	1223.	1528.	1834.	2140.	2445.	2751.	3057.	3668.	4280.	4891.
1/8	459.	611.	764.	917.	1070.	1222.	1375.	1528.	1834.	2139.	2445.
3/16	306.	408.	509.	611.	713.	815.	917.	1019.	1223.	1426.	1630.
1/4	229.	306.	382.	458.	535.	611.	688.	764.	917.	1070.	1222.
5/16	183.	245.	306.	367.	428.	489.	550.	611.	733.	856.	978.
3/8	153.	204.	255.	306.	357.	408.	458.	509.	611.	713.	815.
7/16	131.	175.	218.	262.	306.	349.	393.	437.	524.	611.	699.
1/2	115.	153.	191.	229.	268.	306.	344.	382.	459.	535.	611.
5/8	91.8.	123.	153.	184.	214.	245.	276.	306.	367.	428.	489.
3/4	76.3.	102.	127.	153.	178.	203.	229.	254.	306.	357.	408.
7/8	65.5.	87.3.	109.	131.	153.	175.	196.	219.	262.	306.	349.
1	57.3.	76.4.	95.5.	115.	134.	153.	172.	191.	229.	267.	306.
1 1/8	51.0.	68.0.	85.0.	102.	119.	136.	153.	170.	204.	238.	272.
1 1/4	45.8.	61.2.	76.3.	91.8.	107.	123.	137.	153.	183.	214.	245.
1 1/2	41.7.	55.6.	69.5.	83.3.	97.2.	111.	125.	139.	167.	195.	222.
1 3/4	38.2.	50.8.	63.7.	76.3.	89.2.	102.	115.	127.	152.	178.	204.
1 7/8	35.0.	47.0.	58.8.	70.5.	82.2.	93.9.	106.	117.	141.	165.	188.
2	32.7.	43.6.	54.5.	65.5.	76.4.	87.3.	98.2.	109.	131.	153.	175.
2 1/8	30.5.	40.7.	50.9.	61.1.	71.3.	81.5.	91.9.	102.	122.	143.	163.
2 1/4	28.7.	38.2.	47.8.	57.3.	66.9.	76.4.	86.0.	95.5.	115.	134.	153.
2 1/2	25.4.	34.0.	42.4.	51.0.	59.4.	68.0.	76.2.	85.0.	102.	119.	136.
2 3/4	22.9.	30.6.	38.2.	45.8.	53.5.	61.2.	68.8.	76.3.	91.7.	107.	122.
3	20.8.	27.8.	34.7.	41.7.	48.6.	55.6.	62.5.	69.5.	83.4.	97.2.	111.
3 1/2	19.1.	25.5.	31.8.	38.2.	44.6.	51.0.	57.3.	63.7.	76.4.	89.1.	102.

DIFFERENT STANDARDS FOR WIRE GAUGE IN USE IN THE UNITED STATES

Dimensions of Sizes in Decimal Parts of an Inch

Number of Wire Gauge	American or Brown & Sharpe	Birmingham or Stubs' Iron Wire	American Steel & Wire Co.	Imperial Wire Gauge	Stubs' Steel Wire	United States Standard for Plate	Number Wire Gauge
000000	.....	....	....	.464	...	.46875	000000
00000	.....	....	....	.432	...	.4375	00000
0000	.46	.454	.3938	.400	...	.40625	0000
000	.40964	.425	.3625	.372	...	.375	000
00	.3648	.38	.3310	.348	...	.34375	00
0	.32486	.34	.3065	.324	...	.3125	0
1	.2893	.3	.2830	.300	.227	.28125	1
2	.25763	.284	.2625	.276	.212	.265625	2
3	.22942	.2537	.2437	.252	.219	.2375	3
4	.20431	.2338	.2253	.232	.207	.21375	4
5	.18194	.22	.2070	.212	.204	.21875	5
6	.16202	.203	.1920	.192	.201	.203125	6
7	.14428	.18	.1770	.176	.189	.1875	7
8	.12849	.165	.1620	.160	.197	.171875	8
9	.11442	.148	.1483	.144	.194	.15625	9
10	.10189	.134	.1350	.128	.191	.140625	10
11	.090742	.12	.1205	.116	.188	.125	11
12	.080808	.109	.1055	.104	.185	.109375	12
13	.071961	.095	.0915	.092	.182	.09375	13
14	.064084	.083	.0800	.080	.180	.078125	14
15	.057068	.072	.0720	.072	.178	.0703125	15
16	.05082	.065	.0625	.064	.175	.0625	16
17	.045257	.058	.0540	.0566	.172	.05625	17
18	.040303	.049	.0475	.048	.168	.05	18
19	.03589	.042	.0410	.040	.164	.04375	19
20	.031961	.035	.0348	.036	.161	.0375	20
21	.028462	.032	.03175	.032	.157	.034375	21
22	.025347	.028	.0286	.028	.155	.03125	22
23	.022571	.025	.0258	.024	.153	.028125	23
24	.0201	.022	.0230	.022	.151	.025	24
25	.0179	.02	.0204	.020	.148	.021875	25
26	.01594	.018	.0181	.018	.146	.01875	26
27	.014195	.016	.0173	.0164	.143	.0171875	27
28	.012641	.014	.0162	.0149	.139	.015625	28
29	.011257	.013	.0150	.0136	.134	.0140625	29
30	.010025	.012	.0140	.0124	.127	.0125	30
31	.008928	.01	.0132	.0116	.120	.0109375	31
32	.00795	.009	.0115	.0108	.115	.01015625	32
33	.00708	.008	.0118	.0100	.112	.009375	33
34	.006304	.007	.0104	.0092	.110	.00859375	34
35	.005614	.005	.0095	.0084	.108	.0078125	35
36	.005	.004	.0090	.0076	.106	.00703125	36
37	.004453	....	.008	.0068	.103	.00640625	37
38	.003965	....	....	.0069	.101	.00625	38
39	.003531	....	....	.0052	.099	....	39
40	.003144	....	....	.0048	.097	....	40

While we give the above table for purposes of reference, there is so much chance for error in ordering by gauge number, that we urge all parties when ordering, to give decimal sizes instead of gauge number.

FOR TAPS WITH "V" THREAD

Diameter Tap, in inches	Threads per Inch	Size of Drill	Diameter Tap, in inches	Threads per Inch	Size of Drill	Diameter Tap, in Inches	Threads per Inch	Size of Drill
♂	48	50	11	32	30	♂	18	11 in.
♂	52	49	11	36	29	♂	20	No. 3
♂	54	49	11	40	29	♂	16	No. 1
♂	56	49	11	29	29	♂	18	11 in.
♂	60	48	11	28	28	♂	16	F
♂	32	50	11	30	27	♂	18	11 in.
♂	36	49	11	32	26	♂	16	J
♂	40	47	11	36	24	♂	14	L
♂	48	44	11	24	26	♂	18	11 in.
♂	56	43	11	28	22	♂	14	N
♂	32	44	11	32	20	♂	16	P
♂	36	43	11	36	18	♂	18	11 in.
♂	40	42	11	24	20	♂	14	R
♂	42	41	11	17	17	♂	16	S
♂	48	39	11	30	16	♂	14	S
♂	30	41	11	15	15	♂	16	W
♂	32	40	11	24	16	♂	12	11 in.
♂	36	37	11	28	12	♂	13	X
♂	40	34	11	32	10	♂	14	11 in.
♂	30	33	11	18	17	♂	12	11 in.
♂	32	32	11	20	14	♂	13	11 in.
♂	36	31	11	24	No. 9	♂	14	11 in.
♂	40	30	11	16	No. 10	♂	12	11 in.

**These Sizes are for a Full Thread
FOR TAPS WITH "V" THREAD**

Diameter Tap, in Inches	Threads per Inch	Size of Drill Inches	Diameter Tap, in Inches	Threads per Inch	Size of Drill Inches	Diameter Tap, in Inches	Threads per Inch	Size of Drill Inches
1/4	18	5/16	1 1/4	10	1 1/2	1 3/8	7	1 1/2
1/4	20	5/16	1 1/2	11	1 1/2	1 3/8	7	1 3/8
1/4	24	5/16	1 3/4	12	1 3/8	1 3/8	7	1 3/8
5/8	16	1 1/8	1 3/4	11	1 3/8	1 3/8	6	1 3/8
5/8	18	1 1/8	1 3/4	12	1 3/8	1 3/8	6	1 3/8
5/8	20	1 1/8	1 3/4	11	1 3/8	1 3/8	6	1 3/8
5/8	16	1 1/8	1 3/4	12	1 3/8	1 3/8	6	1 3/8
1	18	1 1/8	1 3/4	10	1 3/8	1 3/8	6	1 3/8
1	16	1 1/8	1 3/4	11	1 3/8	1 3/8	6	1 3/8
1	18	1 1/8	1 3/4	12	1 3/8	1 3/8	6	1 3/8
1 1/8	14	1 1/8	1 3/4	10	1 3/8	1 3/8	6	1 3/8
1 1/8	16	1 1/8	1 3/4	11	1 3/8	1 3/8	6	1 3/8
1 1/8	18	1 1/8	1 3/4	12	1 3/8	1 3/8	6	1 3/8
1 1/8	14	1 1/8	1 3/4	10	1 3/8	1 3/8	5 1/2	1 3/8
1 1/8	16	1 1/8	1 3/4	11	1 3/8	1 3/8	5 1/2	1 3/8
1 1/8	18	1 1/8	1 3/4	12	1 3/8	1 3/8	5 1/2	1 3/8
1 1/8	14	1 1/8	1 3/4	10	1 3/8	1 3/8	5 1/2	1 3/8
1 1/8	16	1 1/8	1 3/4	9	1 3/8	1 3/8	5	1 3/8
1 1/8	18	1 1/8	1 3/4	10	1 3/8	1 3/8	5 1/2	1 3/8
1 1/8	14	1 1/8	1 3/4	9	1 3/8	1 3/8	5 1/2	1 3/8
1 1/8	16	1 1/8	1 3/4	8	1 3/8	1 3/8	5	1 3/8
1 1/8	18	1 1/8	1 3/4	8	1 3/8	1 3/8	5	1 3/8
1 1/8	14	1 1/8	1 3/4	7	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	16	1 1/8	1 3/4	7	1 3/8	1 3/8	5	1 3/8
1 1/8	18	1 1/8	1 3/4	7	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	14	1 1/8	1 3/4	6	1 3/8	1 3/8	5	1 3/8
1 1/8	16	1 1/8	1 3/4	6	1 3/8	1 3/8	5	1 3/8
1 1/8	18	1 1/8	1 3/4	6	1 3/8	1 3/8	5	1 3/8
1 1/8	14	1 1/8	1 3/4	5	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	16	1 1/8	1 3/4	5	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	18	1 1/8	1 3/4	5	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	14	1 1/8	1 3/4	4	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	16	1 1/8	1 3/4	4	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	18	1 1/8	1 3/4	4	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	14	1 1/8	1 3/4	3	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	16	1 1/8	1 3/4	3	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	18	1 1/8	1 3/4	3	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	14	1 1/8	1 3/4	2	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	16	1 1/8	1 3/4	2	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	18	1 1/8	1 3/4	2	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	14	1 1/8	1 3/4	1	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	16	1 1/8	1 3/4	1	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	18	1 1/8	1 3/4	1	1 3/8	1 3/8	4 1/2	1 3/8
1 1/8	14	1 1/8	1 3/4			2		

$\frac{1}{4}$	20	$\frac{1}{15}$	$\frac{5}{9}$	11	$\frac{1}{2}$	$\frac{13}{4}$	6	$1\frac{1}{2}$
$\frac{1}{5}$	18	$\frac{1}{10}$	$\frac{4}{5}$	10	$\frac{1}{5}$	$1\frac{1}{2}$	6	$1\frac{1}{2}$
$\frac{1}{6}$	16	$\frac{1}{8}$	$\frac{3}{4}$	9	$\frac{1}{6}$	$1\frac{1}{3}$	$5\frac{1}{2}$	$1\frac{1}{2}$
$\frac{1}{7}$	14	$\frac{1}{7}$	$\frac{2}{3}$	8	$\frac{1}{7}$	$1\frac{1}{2}$	5	$1\frac{1}{2}$
$\frac{1}{8}$	13	$\frac{1}{8}$	$\frac{1}{2}$	7	$\frac{1}{8}$	$1\frac{1}{8}$	5	$1\frac{1}{2}$
$\frac{1}{9}$	12	$\frac{1}{9}$	$\frac{1}{3}$	7	$\frac{1}{9}$	4	$4\frac{1}{2}$	$1\frac{1}{2}$

CONTENTS OF FULL CASES OF MACHINE BOLTS

Length Inches	1/4 In. Diam.	5/16 In. Diam.	3/8 In. Diam.	7/16 In. Diam.	1/2 In. Diam.	Length Inches	1/4 In. Diam.	5/16 In. Diam.	3/8 In. Diam.	7/16 In. Diam.	1/2 In. Diam.
1	14,000	7,000	5,000	....	....	5	5,000	3,000	2,200	1,500	1,000
1 1/4	10,000	6,000	5,000	2,500	1,700	5 1/4	....	....	....	1,400	1,000
1 1/2	10,000	5,000	4,000	2,500	1,700	5 1/2	4,000	2,500	2,100	1,400	....
1 3/4	8,000	5,000	4,000	2,200	1,500	5 3/4	....	....	....	....	....
2	6,000	4,000	3,900	2,200	1,500	6	6,000	2,500	1,900	1,400	900
2 1/4	6,000	4,000	3,000	2,400	2,000	6 1/4	....	....	1,500	1,200	800
2 1/2	9,000	5,000	3,500	2,400	1,600	7	....	....	1,400	1,000	900
2 3/4	9,000	4,500	3,400	2,300	1,500	7 1/4	....	....	1,400	1,000	800
3	7,000	4,500	3,300	2,100	1,500	8	....	....	1,300	1,100	750
3 1/4	7,000	4,000	3,000	2,300	1,500	8 1/4	....	....	1,300	900	650
3 1/2	6,500	4,000	3,000	1,800	1,400	9	....	....	1,300	900	650
3 3/4	6,500	4,000	3,000	1,800	1,500	9 1/4	....	....	1,300	850	650
4	6,000	3,750	3,000	1,800	1,100	10	....	....	1,150	800	600
4 1/4	7,500	3,750	2,300	1,650	1,000	10 1/4	....	....	1,000	800	600
4 1/2	....	3,500	2,200	1,600	1,200	11	....	....	1,000	800	550
4 3/4	5,000	3,000	2,200	1,600	1,200	11 1/4	....	....	....	....	400
4 1/2	....	....	2,400	1,600	1,200	12	....	....	700	700	500

1/2x13 to 24—200 in a case

CONTENTS OF FULL KEGS OF MACHINE AND PLOW BOLTS

MACHINE BOLTS

Length Inches	1/2 Inch Diam.	3/4 Inch Diam.	1 Inch Diam.	1 1/2 Inch Diam.	2 Inch Diam.
1	1,500	800	500	....	....
1 1/4	1,400	750	500	....	....
1 1/2	1,300	700	450	....	....
1 3/4	1,200	650	400	....	....
2	1,000	600	375	250	175
2 1/4	1,000	550	375	250	....
2 1/2	900	500	350	250	150
2 3/4	850	475	325	225	....
3	800	450	300	200	150
3 1/4	....	400	275	200	....
3 1/2	750	400	250	200	125
3 3/4	....	375	250	175	....
4	600	350	250	175	125
4 1/4	....	325	225	150	....
4 1/2	550	300	225	150	125
4 3/4	....	300	200	150	....
5	500	275	200	150	100
5 1/4	....	....	200	....	....
5 1/2	450	250	200	125	....
5 3/4	....	....	200	....	....
6	400	250	175	125	....
6 1/4	350	225	175	....	....
7	300	225	150	....	....
7 1/4	250	200	150	....	....
8	250	200	150	....	....
8 1/4	....	200	150	....	....
9	....	175	125	....	....

PLOW BOLTS

Length Inches	5/16 Inch Diam.	3/8 Inch Diam.	7/16 Inch Diam.	1/2 Inch Diam.
1	5,000	3,500	2,700	1,700
1 1/4	4,500	3,200	2,300	1,600
1 1/2	4,000	2,700	2,000	1,400
1 3/4	3,500	2,400	1,800	1,300
2	3,000	2,000	1,600	1,200
2 1/4	....	1,900	1,500	1,100
2 1/2	....	1,800	1,300	1,000
2 3/4	....	1,600	1,200	900
3	....	1,500	1,100	800
3 1/4	....	1,400	1,000	800
3 1/2	....	1,300	900	700
4	....	1,100	800	600
5	....	....	....	....
6	....	....	....	....
7	....	....	....	....
8	....	....	....	....
9	....	....	....	....
10	....	....	....	....
11	....	....	....	....
12	....	....	....	....
13	....	....	....	....
14	....	....	....	....

CONTENTS OF FULL CASES OF CARRIAGE BOLTS

Length Inches	1/4 In. Diam.	5/16 In. Diam.	3/8 In. Diam.	7/16 In. Diam.	1/2 In. Diam.	Length Inches	1/4 In. Diam.	5/16 In. Diam.	3/8 In. Diam.	7/16 In. Diam.	1/2 In. Diam.	3/4 In. Diam.
1	14,000	7,000	5,000	....	....	5 1/4	4,400	2,800	2,000	1,300	1,000	500
1 1/4	10,000	7,000	5,000	2,500	2,000	5 1/2	4,000	2,400	2,000	1,500	1,000	500
1 1/2	10,000	5,000	4,000	2,500	2,000	6	3,800	2,400	1,600	1,200	900	500
1 3/4	8,000	5,000	3,000	2,350	1,800	7	3,500	2,100	1,500	1,050	900	400
2	6,200	4,000	3,000	2,000	1,500	7 1/4	3,000	1,600	1,200	900	750	400
2 1/4	5,000	4,000	2,500	2,000	1,500	8	3,000	1,600	1,200	900	750	400
2 1/2	5,000	3,000	2,500	2,500	2,000	8 1/4	....	1,600	1,200	900	700	350
2 3/4	5,000	3,000	2,500	2,100	1,700	9	....	1,500	1,200	900	750	350
3	8,000	4,200	3,200	2,300	1,600	9 1/4	....	1,500	1,100	850	650	350
3 1/4	6,900	4,500	3,000	2,100	1,500	10	....	1,300	1,100	850	650	325
3 1/2	7,200	4,200	2,800	2,000	1,500	10 1/4	....	1,300	....	800	600	300
3 3/4	8,000	3,900	3,000	2,000	1,350	11	....	1,200	1,000	800	600	300
4	6,900	4,000	2,500	1,800	1,500	11 1/4	....	900	700	600	400	300
4 1/4	6,900	3,750	2,500	1,800	1,100	12	....	900	700	600	500	300
4 1/2	6,000	3,400	2,200	1,500	1,000	12 1/4	....	....	....	....	500	200
4 3/4	5,200	3,400	2,200	1,500	1,200	13	....	....	....	....	500	300
5	5,200	3,000	2,000	1,600	1,200	13 1/4	....	....	....	....	500	....
5 1/4	5,200	3,200	2,400	1,600	1,200	14	....	....	....	....	500	....

1/4x14 1/2 inches to 24 inches—200 in a case
1/2x13 1/2 inches to 24 inches—200 in a case

MACHINE BOLTS

With Square Heads and Square Nuts
AVERAGE WEIGHT PER HUNDRED

Diameter	¼	5/16	¾	7/16	½	9/16	¾	¾	¾	1
Length Inches	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1 ½	3.1	5.6	8.8	13.5	18.5	25.8	33.4	53.8	88.0	130.0
2	3.7	6.5	10.2	15.4	21.0	29.2	37.5	59.7	96.2	140.8
2 ½	4.4	7.5	11.7	17.4	23.6	32.7	41.6	65.7	104.4	151.6
3	5.0	8.4	13.1	19.3	26.1	36.1	45.7	71.6	112.6	162.4
3 ½	5.7	9.4	14.6	21.3	28.7	39.6	49.8	77.6	120.8	173.2
4	6.3	10.3	16.0	23.2	31.2	43.0	53.9	83.5	129.0	184.0
4 ½	7.0	11.3	17.5	25.2	33.8	46.5	58.0	89.5	137.2	194.8
5	7.6	12.2	18.9	27.1	36.3	49.9	62.1	95.4	145.4	205.6
5 ½	8.3	13.2	20.4	29.1	38.9	53.4	66.2	101.4	153.6	216.8
6	8.9	14.1	21.8	31.0	41.4	56.8	70.3	107.3	161.8	227.2
6 ½	9.6	15.1	23.3	33.0	44.0	60.3	74.4	113.3	170.0	238.0
7	10.2	16.0	24.7	34.9	46.5	63.7	78.5	119.2	178.2	248.8
7 ½	10.9	17.0	26.2	36.9	49.1	67.2	82.6	125.2	186.4	259.6
8	11.5	17.9	27.6	38.8	51.6	70.6	86.7	131.1	194.6	270.4
9	....	....	30.5	42.7	56.7	77.5	94.9	143.0	211.0	292.0
10	....	....	33.4	46.6	61.8	84.4	103.1	154.9	227.4	313.6
11	....	....	36.3	50.5	66.9	91.3	111.3	166.8	243.8	335.2
12	....	....	39.2	54.4	....	98.2	119.5	178.7	260.2	356.8
13	....	....	....	....	77.1	105.1	127.7	190.6	276.6	378.4
14	....	....	....	....	82.2	112.0	135.9	202.5	293.0	400.0
15	....	....	....	....	87.3	118.9	144.1	214.4	309.4	421.6
16	....	....	....	....	92.4	125.8	152.3	226.3	325.8	443.2
17	....	....	....	....	97.5	132.7	160.5	238.2	342.2	464.8
18	....	....	....	....	102.6	139.6	168.7	250.1	358.6	486.4
19	....	....	....	....	107.7	146.5	176.9	262.0	375.0	508.0
20	....	....	....	....	112.8	153.4	185.1	273.9	391.4	529.6
21	....	....	....	....	....	....	193.3	285.8	407.8	551.2
22	....	....	....	....	....	....	201.5	297.7	424.2	572.8
23	....	....	....	....	....	....	209.7	309.6	440.6	594.4
24	....	....	....	....	....	....	217.9	321.5	457.0	616.0
25	....	....	....	....	....	....	226.1	333.4	473.4	637.6
26	....	....	....	....	....	....	234.3	345.3	489.8	659.2
27	....	....	....	....	....	....	242.5	357.2	506.2	680.8
28	....	....	....	....	....	....	250.7	369.1	522.6	702.4
29	....	....	....	....	....	....	258.9	381.0	539.0	724.0
30	....	....	....	....	....	....	267.1	392.9	555.4	745.6

MACHINE BOLTS

With Square Heads and Square Nuts
AVERAGE WEIGHT PER HUNDRED

Diameter	1½	1¾	1½	1½	1¾	2
Length Inches	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
3	210.0	286.0	370	470	....	....
3 ½	223.8	302.5	391	495	....	....
4	237.6	319.1	412	520	750	1070
4 ½	251.4	335.6	433	545	784	1114
5	265.2	352.2	454	570	818	1158
5 ½	279.0	368.7	475	595	852	1202
6	292.8	385.3	496	620	886	1246
6 ½	306.6	401.8	517	645	920	1290
7	320.4	418.4	538	670	954	1334
7 ½	334.2	434.9	559	695	988	1378
8	348.0	451.5	580	720	1022	1422
9	375.6	484.6	622	770	1090	1510
10	403.2	517.7	664	820	1158	1598
11	430.8	550.8	706	870	1226	1686
12	458.4	583.9	748	920	1294	1774
13	486.0	617.0	790	970	1362	1862
14	513.6	650.1	832	1020	1430	1950
15	541.2	683.2	874	1070	1498	2038
16	568.8	716.3	916	1120	1566	2126
17	596.4	749.4	958	1170	1634	2214
18	624.0	782.5	1000	1220	1702	2302
19	651.6	815.6	1042	1270	1770	2390
20	679.2	848.7	1084	1320	1838	2478
21	706.8	881.8	1126	1370	1906	2566
22	734.4	914.9	1168	1420	1974	2654
23	762.0	948.0	1210	1470	2042	2742
24	789.6	981.1	1252	1520	2110	2830
25	817.2	1014.2	1294	1570	2178	2918
26	844.8	1047.3	1336	1620	2246	3006
27	872.4	1080.4	1378	1670	2314	3094
28	900.0	1113.5	1420	1720	2382	3182
29	927.6	1146.6	1462	1770	2450	3270
30	955.2	1179.7	1504	1820	2518	3358

COACH AND LAG SCREWS WITH SQUARE HEADS

AVERAGE WEIGHT PER HUNDRED

Diam.	5/16	¾	7/16	½	¾	¾	¾	1
Length, Ins.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1½	3.8	5.4	8.4	11.4	...	...	...	...
2	4.7	6.6	10.2	13.3	22.2	...	...	...
2½	5.6	7.9	11.9	16.1	26.0	41.0	...	...
3	6.5	9.1	13.6	18.4	29.8	46.5	64.8	...
3½	7.4	10.4	15.4	20.8	33.7	52.0	72.5	103
4	8.3	11.6	17.1	23.1	37.5	57.5	80.2	113
4½	9.2	12.9	18.9	25.5	41.4	63.0	87.9	123
5	10.1	14.1	20.6	27.8	45.2	68.5	95.6	133
5½	11.0	15.4	22.4	30.2	49.1	74.0	103.3	143
6	11.9	16.6	24.1	32.5	52.9	79.5	111.0	153
7	12.7	17.1	27.6	37.2	60.6	90.5	126.4	173
8	13.5	21.6	31.1	41.9	68.3	101.5	141.8	193
9	17.3	24.1	34.6	46.6	76.0	112.5	157.2	213
10	19.1	26.6	38.1	51.3	83.7	123.5	172.6	233
11	20.9	29.1	41.6	56.0	91.4	134.5	188.0	253
12	22.7	31.6	45.1	60.7	99.1	145.5	203.4	273

CONTENTS OF FULL KEGS OF COACH AND LAG SCREWS

Length inches	Diameter ¼ inch	Diameter ½ inch	Diameter ¾ inch	Diameter 1 inch
2	3,500	1,800	...	...
2½	2,500	1,500	900	...
3	2,000	1,200	800	...
3½	1,800	1,000	650	450
4	1,500	800	550	400
4½	1,200	750	500	350
5	1,000	650	450	350
5½	900	600	400	300
6	700	600	400	300
7	...	500	350	250
8	...	500	300	250
9	...	400	300	200

STANDARD THREADS FOR BOLTS

Giving the Number of Threads per Inch for Each Form

Size, Inches	¼	5/16	¾	7/16	½	¾	¾	¾	1	1½	1½	1½	1½	1½	1½	2
V-thread	20	18	16	14	12	11	10	9	8	7	7	6	6	5	5	4½
U. S. Standard	20	18	16	14	13	11	10	9	8	7	7	6	6	5½	5	4½
Whitworth	20	18	16	14	12	11	10	9	8	7	7	6	6	5	5	4½

V-form thread is supplied unless otherwise ordered

SIZES OF TAP DRILLS

For Machine Screw Taps

Size of Tap, Number	Size of Drill, Number	Size of Tap, Number	Size of Drill, Number	Size of Tap, Number	Size of Drill, Number	Size of Tap, Number	Size of Drill, Number
2 x 48	50	7 x 32	30	13 x 20	15	18 x 20	B
2 x 56	49	8 x 24	30	13 x 22	15	19 x 18	A
2 x 64	48	8 x 30	30	13 x 24	13	19 x 16	C
3 x 40	47	8 x 32	29	14 x 20	13	19 x 20	D
3 x 48	45	9 x 24	28	14 x 22	11	20 x 16	D
3 x 56	44	9 x 28	28	14 x 24	9	20 x 18	F
4 x 32	43	9 x 30	27	15 x 18	10	20 x 20	H
4 x 36	42	9 x 32	25	15 x 20	8	22 x 16	J
4 x 40	41	10 x 24	25	15 x 22	6	22 x 18	L
5 x 30	40	10 x 30	22	15 x 24	5	24 x 14	M
5 x 32	40	10 x 32	21	16 x 16	7	24 x 16	N
5 x 36	38	11 x 24	21	16 x 18	6	24 x 18	O
5 x 40	37	11 x 28	17	16 x 20	5	26 x 14	O
6 x 30	35	11 x 30	17	17 x 16	6	26 x 16	P
6 x 32	35	12 x 20	19	17 x 18	2	28 x 14	P
6 x 36	33	12 x 22	17	17 x 20	2	28 x 16	S
6 x 40	32	12 x 24	17	18 x 16	2	30 x 14	U
7 x 28	32	12 x 28	15	18 x 18	1	30 x 16	V
7 x 30	31						

SIZES OF TAP DRILLS

For Pipe Taps

Size of Tap	Size of Drill	Size of Tap	Size of Drill	Size of Tap	Size of Drill
¼	13	¾	23	2	2½
½	17	1	1½	2½	2½
¾	21	1½	1½	3	3
1	25	1½	1½		

USEFUL INFORMATION NUMBER OF TANK RIVETS TO THE POUND

Length Inches	1/4 in. Diam.		3/16 in. Diam.		1/2 in. Diam.		5/16 in. Diam.		3/4 in. Diam.		7/16 in. Diam.		Length Inches	1/4 in. Diam.		3/16 in. Diam.		1/2 in. Diam.		5/16 in. Diam.		3/4 in. Diam.		7/16 in. Diam.	
	F. & R.	Cter. - sunk	F. & R.	Cter. - sunk	F. & R.	Cter. - sunk	F. & R.	Cter. - sunk	F. & R.	Cter. - sunk	F. & R.	Cter. - sunk		F. & R.	Cter. - sunk	F. & R.	Cter. - sunk	F. & R.	Cter. - sunk	F. & R.	Cter. - sunk	F. & R.	Cter. - sunk	F. & R.	Cter. - sunk
7/16	204	280	165	230	103	155	67	89	...	...	...	...	1 1/8	87	104	58	67	34	41	22	27	15	19	10	13 1/2
1	190	250	153	200	92	128	68	78	35	...	...	...	1 1/4	81	96	54	62	32	38	21	25	14	18	10	12 1/2
1 1/8	175	222	135	172	81	103	50	69	45	...	...	...	1 1/2	...	...	51	58	30	36	20	24	13	17	9 1/2	11 1/2
1 1/4	160	200	118	143	71	93	44	60	27	29	...	...	2	...	...	48	54	29	34	19	23	12	16	9	11
1 1/2	144	180	103	129	63	80	39	53	24	34	...	...	2 1/4	...	...	43	49	27	32	17	21	11	15	8 1/2	10 1/4
1 3/4	135	165	92	114	56	70	35	47	22	30	15	...	2 1/2	...	...	39	45	24	29	16	20	10	14	7 1/2	9 1/2
2	126	150	84	102	50	62	32	42	20	27	14 1/2	...	3	...	...	35	40	22	26	14	17	9	12	7 1/4	9
2 1/8	116	140	77	93	46	56	30	37	19	24	13	16	3 1/8	...	...	31	36	20	24	13	16	8	11	6 1/2	8 1/4
2 1/4	108	130	72	85	43	51	28	34	18	22	12	15	3 1/4	...	...	...	...	18	21	11	14	7	10	6	7 1/2
2 1/2	100	120	67	78	40	47	26	31	17	21 1/2	14 1/2	...	4	...	...	...	...	16	20	10	13	6	9	5	6 1/2
2 3/4	93	112	62	72	37	44	24	29	16	20 1/2	14	...													

HOT PRESSED NUTS

United States Standard

Size of Bolt Inches	Square				Hexagon			
	Average Number in 200-lb. Keg		Weight per 1,000		Average Number in 200-lb. Keg		Weight per 1,000	
	Blank	Tapped	Blank Lbs.	Tapped Lbs.	Blank	Tapped	Blank Lbs.	Tapped Lbs.
3/16	34,000	35,700	6.	5.6	40,000	42,800	5.	4.6
1/4	15,000	15,750	13.3	12.50	18,150	19,420	11.	10.2
5/16	8,400	8,820	23.2	22.	10,915	11,679	19.	17.7
3/8	5,317	5,583	37.6	35.7	7,600	8,152	26.3	24.5
7/16	3,686	3,870	55.	52.2	4,167	4,458	49.	45.6
1/2	2,580	2,709	77.6	73.7	3,112	3,330	66.2	61.6
9/16	1,970	2,069	101.5	96.	2,310	2,472	86.6	80.6
5/8	1,520	1,596	140.	133.	1,648	1,763	121.5	113.
3/4	883	927	226.5	215.2	1,024	1,095	195.	181.
1	552	580	362.	344.	726	775	295.	272.
1 1/8	376	395	531.	504.	431	461	458.	421.
1 1/4	272	286	735.	698.	335	358	597.	555.
1 1/2	203	213	984.	935.	237	254	844.	785.
1 3/4	150	158	1,355.	1,287.	173	185	1,141.	1,061.
2	116	122	1,724.	1,638.	140	150	1,427.	1,327.
2 1/8	92	97	2,180.	2,071.	110	118	1,818.	1,691.
2 1/4	76	80	2,617.	2,486.	94	101	2,248.	2,091.
2 1/2	65	68	2,962.	2,798.	76	82	2,641.	2,457.
2 3/4	53	56	3,773.	3,584.	60	64	3,328.	3,096.
3	47	49	4,651.	4,418.	53	57	3,796.	3,530.
3 1/8	37	39	5,405.	5,135.	45	48	4,500.	4,185.
3 1/4	32	34	6,250.	5,938.	35	37	5,714.	5,314.
3 1/2	27	28	7,407.	7,037.	33	35	6,261.	5,812.
3 3/4	23	24	8,500.	8,075.	30	32	6,760.	6,278.
4	21	22	9,523.	9,047.	26	27	7,692.	7,154.
4 1/8	16	17	12,250.	11,638.	21	21	10,000.	9,246.

COLD-PUNCHED, CHAMFERED, TRIMMED AND REAMED NUTS

United States Standard

Size of Bolt Inches	Square				Hexagon			
	Average Number in 200-lb. Keg		Weight in lbs. per 1,000		Average Number in 200-lb. Keg		Weight in lbs. per 1,000	
	Blank	Tapped	Blank	Tapped	Blank	Tapped	Blank	Tapped
1/4	13,000	13,700	15.4	14.6	16,000	17,390	12.5	11.5
5/16	7,400	7,800	27.	25.6	8,000	8,695	25.	23.
3/8	4,800	5,000	41.7	40.	5,300	5,797	37.5	34.5
7/16	3,200	3,400	62.5	58.8	3,853	4,184	51.9	47.8
1/2	2,300	2,400	86.9	83.3	2,666	2,898	75.	69.
9/16	1,700	1,800	117.6	111.	2,094	2,274	95.5	87.9
5/8	1,240	1,300	161.	154.	1,550	1,680	126.6	118.
3/4	800	840	250.	238.	952	1,028	210.	194.
7/8	490	520	408.	384.	578	626	346.	319.
1	343	355	583.	563.	400	434	500.	460.
1 1/8	250	263	800.	760.	290	315	690.	635.
1 1/4	175	184	1,143.	1,087.	228	245	875.	815.
1 1/2	139	146	1,438.	1,370.	169	185	1,181.	1,086.
1 3/4	110	115	1,818.	1,739.	131	142	1,525.	1,403.
2	89	93	2,247.	2,150.	103	113	1,925.	1,771.
2 1/8	59	62	3,390.	3,225.	71	78	2,794.	2,560.
2 1/4	49	53	4,081.	3,773.	57	62	3,493.	3,214.
2 1/2	35	37	5,716.	5,405.	50	54	3,975.	3,657.
2 3/4	...	...	...	...	42	46	4,718.	4,341.
3	...	...	...	...	36	39	5,593.	5,146.
3 1/8	...	...	...	...	31	34	6,375.	5,865.
3 1/4	...	...	...	...	28	30	7,143.	6,571.
3 1/2	...	...	...	...	25	27	7,692.	7,076.
3 3/4	...	...	...	...	18	20	10,690.	9,942.
4	...	...	...	...	15	16	13,490.	12,490.
4 1/8	...	...	...	...	11	12	16,810.	15,685.
4 1/4	...	...	...	...	9	10	20,500.	19,065.
4 1/2	...	...	...	...	8	9	25,000.	23,250.

WEIGHTS OF ROUND, SQUARE AND HEXAGON STEEL

Weight of one Cubic Inch=.2836 lbs. Weight of one Cubic Foot=490 lbs.

Thick- ness of Diameter	Round Weight per inch	Square Weight per inch	Hexa- gon Weight per inch	Thick- ness of Diameter	Round Weight per inch	Square Weight per inch	Hexa- gon Weight per inch	Thick- ness of Diameter	Round Weight per inch	Square Weight per inch	Hexa- gon Weight per inch
3/8	.0002	.0003	.0002	1 1/2	.2090	.2661	.2305	3 3/4	2.1752	2.7719	2.3956
7/8	.0009	.0011	.0010	1 3/4	.2227	.2836	.2456	4	2.3521	2.9954	2.5913
1	.0020	.0025	.0022	1 7/8	.2515	.3201	.2773	4 1/4	2.5271	3.2203	2.7977
1 1/8	.0035	.0044	.0038	1 7/8	.2819	.3559	.3129	4 1/2	2.7286	3.4740	3.0083
1 1/4	.0054	.0069	.0060	1 7/8	.3141	.4142	.3464	4 3/4	2.9269	3.7265	3.2275
1 1/2	.0078	.0101	.0086	1 7/8	.3480	.4431	.3838	4 3/4	3.1323	3.9880	3.4539
1 3/4	.0107	.0136	.0118	1 7/8	.3837	.4885	.4231	4 3/4	3.3446	4.2582	3.6880
1 7/8	.0139	.0177	.0154	1 7/8	.4211	.5362	.4643	4 3/4	3.5638	4.5374	3.9298
2	.0176	.0224	.0194	1 7/8	.4603	.5860	.5076	4 3/4	3.7900	4.8254	4.1792
2 1/8	.0218	.0277	.0240	1 7/8	.5012	.6487	.5526	4 3/4	4.0232	5.1223	4.4364
2 1/4	.0263	.0335	.0290	1 7/8	.5438	.6930	.5936	4 3/4	4.2634	5.4280	4.7011
2 1/2	.0313	.0405	.0345	1 7/8	.5882	.7489	.6480	4 3/4	4.5105	5.7426	4.9736
2 3/4	.0368	.0466	.0405	1 7/8	.6343	.8076	.6994	4 3/4	4.7645	6.0662	5.2538
2 7/8	.0426	.0543	.0470	1 7/8	.6821	.8685	.7521	4 3/4	5.0255	6.6276	5.5416
3	.0489	.0623	.0540	1 7/8	.7317	.9316	.8069	4 3/4	5.2935	6.7397	5.8371
3 1/8	.0557	.0709	.0614	1 7/8	.7831	.9970	.8635	4 3/4	5.5685	7.0397	6.1403
3 1/4	.0629	.0800	.0693	1 7/8	.8361	1.0646	.9220	4 3/4	5.8504	7.4496	6.4511
3 1/2	.0705	.0897	.0777	1 7/8	.8910	1.1342	.9855	4 3/4	6.1392	7.8164	6.7697
3 3/4	.0785	.1036	.0866	1 7/8	.9475	1.2064	1.0448	4 3/4	6.4351	8.1930	7.0959
3 7/8	.0870	.1108	.0959	1 7/8	1.0058	1.2806	1.1091	4 3/4	6.7379	8.5786	7.4298
4	.0959	.1221	.1058	1 7/8	1.0658	1.3570	1.1753	4 3/4	7.0476	8.9729	7.7713
4 1/8	.1053	.1340	.1161	1 7/8	1.1276	1.4357	1.2434	4 3/4	7.3643	9.3762	8.1214
4 1/4	.1151	.1465	.1270	1 7/8	1.1911	1.5165	1.3135	4 3/4	7.6880	9.7883	8.4774
4 1/2	.1253	.1622	.1382	1 7/8	1.2564	1.6569	1.3854	4 3/4	8.0177	10.2192	8.8420
4 3/4	.1359	.1732	.1499	1 7/8	1.3234	1.6849	1.4593	4 3/4	8.4107	10.6717	9.3243
4 7/8	.1472	.1872	.1620	1 7/8	1.3921	1.7724	1.5351	4 3/4	8.8077	11.1487	9.8273
5	.1586	.2019	.1749	1 7/8	1.5348	1.9541	1.6924	4 3/4	9.4107	11.9817	10.3673
5 1/8	.1705	.2171	.1880	1 7/8	1.6845	2.1446	1.8574	4 3/4	10.1485	12.9211	11.1908
5 1/4	.1829	.2329	.2015	1 7/8	1.8411	2.3441	2.0304	4 3/4	10.9142	13.8960	12.0351
5 1/2	.1958	.2492	.2159	1 7/8	2.0046	2.5548	2.2105	4 3/4	12.5291	15.9520	13.8158
				3				8	14.2553	18.1497	15.7192

Multiply above weights by 1.125 for high speed steel, .993 for wrought iron, .918 for cast iron, 1.0331 for cast brass, 1.1209 for copper, and 1.1748 for phosphorus bronze.

WEIGHTS AND DIMENSIONS

Standard Steel Tees with Equal Legs.

Size inches		Thickness of Metal inches		Estimated Weight per Foot Pounds	Size inches		Thickness of Metal inches		Estimated Weight per Foot Pounds	Size inches		Thickness of Metal inches		Estimated Weight per Foot Pounds
Flange	Stem	Flange	Stem		Flange	Stem	Flange	Stem		Flange	Stem	Flange	Stem	
4	4	1/2	1/2	13.5	2 1/4	2 1/4	1/2	1/2	4.9	1 1/4	1 1/4	1/2	1/2	1.09
4 1/8	4 1/8	1/2	1/2	10.5	2 1/4	2 1/4	1/2	1/2	4.1	1 1/4	1 1/4	1/2	1/2	1.37
4 1/4	4 1/4	1/2	1/2	11.7	2 1/4	2 1/4	1/2	1/2	4.3	1 1/4	1 1/4	1/2	1/2	1.7
4 1/2	4 1/2	1/2	1/2	9.2	2 1/4	2 1/4	1/2	1/2	3.6	1 1/4	1 1/4	1/2	1/2	1.53
4 3/4	4 3/4	1/2	1/2	9.9	2 1/4	2 1/4	1/2	1/2	3.09	1 1/4	1 1/4	1/2	1/2	1.25
5	5	1/2	1/2	7.8	2 1/4	2 1/4	1/2	1/2	2.47	1 1/4	1 1/4	1/2	1/2	0.89
5 1/8	5 1/8	1/2	1/2	6.7	2 1/4	2 1/4	1/2	1/2	1.94	1 1/4	1 1/4	1/2	1/2	0.73
5 1/4	5 1/4	1/2	1/2	6.4	2 1/4	2 1/4	1/2	1/2	2.02	1 1/4	1 1/4	1/2	1/2	0.61
5 1/2	5 1/2	1/2	1/2	5.5	2 1/4	2 1/4	1/2	1/2	1.59	1 1/4	1 1/4	1/2	1/2	0.5

Standard Steel Tees with Unequal Legs.

Size	Round	Square	Size	Round	Square	Size	Round	Square
inches	Estimated Weight in Pounds	Estimated Weight in Pounds	inches	Estimated Weight in Pounds	Estimated Weight in Pounds	inches	Estimated Weight in Pounds	Estimated Weight in Pounds
4	.930	1.184	3 1/2	5.001	6.368	2 1/2	23.81	30.31
4 1/8	1.653	2.105	3 1/4	5.952	7.578	2 1/4	27.94	35.57
4 1/4	2.583	3.290	3 1/2	6.985	8.893	2 1/2	32.41	41.26
4 1/2	3.720	4.736	3 1/4	8.101	10.31	2 1/2	37.20	47.37
4 3/4	5.063	6.446	3 1/2	9.300	11.84	2 1/2	42.33	53.89
4 7/8	6.613	8.420	3 1/2	10.58	13.47	2 1/2	47.57	60.00
5	8.370	1.066	3 1/2	11.35	15.21	2 1/2	52.97	66.33
5 1/8	1.033	1.316	3 1/2	13.39	17.05	2 1/2	58.57	72.97
5 1/4	1.488	1.895	3 1/2	14.32	19.00	2 1/2	64.33	80.02
5 1/2	2.025	2.579	3 1/2	16.53	21.05	2 1/2	70.23	87.57
5 3/4	2.645	3.368	3 1/2	18.23	23.21	2 1/2	76.33	95.23
5 7/8	3.348	4.263	3 1/2	20.01	25.47	2 1/2	82.63	103.00
6	4.133	5.263				2 1/2	89.13	111.8
						2 1/2	95.83	120.6
						2 1/2	102.63	129.6
						2 1/2	109.63	138.6

WEIGHTS OF ROUND AND SQUARE IRON

Estimated weight per lineal foot.

Size in inches	Round Estimated Weight in Pounds	Square Estimated Weight in Pounds	Size in inches	Round Estimated Weight in Pounds	Square Estimated Weight in Pounds	Size in inches	Round Estimated Weight in Pounds	Square Estimated Weight in Pounds
1/8	.0930	1.184	1 1/2	5.001	6.368	3	23.81	30.31
1/4	.1653	2.105	1 1/4	5.952	7.578	3 1/4	27.94	35.57
3/8	.2583	3.290	1 1/2	6.985	8.893	3 1/2	32.41	41.26
1/2	.3720	4.736	1 1/2	8.101	10.31	3 3/4	37.20	47.37
5/8	.5063	6.446	1 1/2	9.300	11.84	4	42.33	53.89
3/4	.6613	8.420	2	10.58	13.47	4 1/4	47.57	60.00
7/8	.8370	1.066	2 1/4	11.35	15.21	4 1/2	52.97	66.33
1	1.033	1.316	2 1/2	13.39	17.05	4 3/4	58.57	72.97
1 1/8	1.488	1.895	2 1/2	14.32	19.00	5	64.33	80.02
1 1/4	2.025	2.579	2 1/2	16.53	21.05	5 1/4	70.23	87.57
1 1/2	2.645	3.368	2 1/2	18.23	23.21	5 1/2	76.33	95.23
1 3/4	3.348	4.263	2 1/2	20.01	25.47	5 3/4	82.63	103.00
1 7/8	4.133	5.263				6	89.13	111.8
						6 1/4	95.83	120.6
						6 1/2	102.63	129.6
						6 3/4	109.63	138.6

WEIGHTS OF FLAT STEEL BARS

Estimated weight per lineal foot.

Wide		Thickness in Inches															
		1/16	3/16	1/2	5/16	3/4	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1	
1	in.	.2125	.425	.638	.85	1.06	1.28	1.49	1.70	1.92	2.12	2.34	2.55	2.76	2.98	3.19	3.40
1 1/4	in.	.265	.53	.797	1.06	1.33	1.59	1.86	2.12	2.39	2.65	2.92	3.19	3.45	3.72	3.99	4.25
1 1/2	in.	.32	.64	.957	1.25	1.59	1.92	2.23	2.55	2.87	3.19	3.51	3.83	4.14	4.47	4.78	5.10
1 3/4	in.	.3725	.745	1.11	1.49	1.86	2.23	2.60	2.98	3.35	3.72	4.09	4.47	4.84	5.20	5.58	5.95
2	in.	.425	.85	1.28	1.70	2.12	2.55	2.98	3.40	3.83	4.25	4.67	5.10	5.53	5.95	6.38	6.80
2 1/4	in.	.4775	.955	1.44	1.91	2.39	2.87	3.35	3.83	4.30	4.78	5.26	5.75	6.21	6.69	7.18	7.65
2 1/2	in.	.53	1.06	1.59	2.12	2.65	3.19	3.72	4.25	4.78	5.31	5.84	6.38	6.90	7.44	7.97	8.50
2 3/4	in.	.585	1.17	1.75	2.34	2.92	3.51	4.09	4.67	5.26	5.84	6.43	7.02	7.60	8.18	8.77	9.35
3	in.	.6375	1.275	1.91	2.55	3.19	3.83	4.46	5.10	5.74	6.38	7.02	7.65	8.29	8.93	9.57	10.20
3 1/4	in.	.69	1.38	2.07	2.76	3.45	4.14	4.83	5.53	6.22	6.91	7.60	8.29	8.98	9.67	10.36	11.05
3 1/2	in.	.745	1.49	2.23	2.98	3.72	4.47	5.20	5.95	6.70	7.44	8.18	8.93	9.67	10.41	11.16	11.90
3 3/4	in.	.7975	1.595	2.39	3.19	3.99	4.78	5.58	6.38	7.17	7.97	8.76	9.57	10.36	11.16	11.95	12.75
4	in.	.85	1.70	2.55	3.40	4.25	5.10	5.95	6.80	7.65	8.50	9.35	10.20	11.05	11.90	12.75	13.60
4 1/4	in.	.9025	1.805	2.71	3.61	4.52	5.42	6.32	7.22	8.13	9.03	9.93	10.84	11.74	12.65	13.55	14.45
4 1/2	in.	.9575	1.915	2.87	3.83	4.78	5.74	6.70	7.65	8.61	9.57	10.52	11.48	12.43	13.39	14.34	15.30
4 3/4	in.	1.01	2.02	3.03	4.04	5.05	6.06	7.07	8.08	9.09	10.10	11.11	12.12	13.12	14.13	15.14	16.15
5	in.	1.0625	2.125	3.19	4.25	5.31	6.38	7.44	8.50	9.57	10.63	11.69	12.75	13.81	14.87	15.94	17.00
5 1/4	in.	1.115	2.23	3.35	4.46	5.58	6.69	7.81	8.93	10.04	11.16	12.27	13.39	14.50	15.62	16.74	17.85
5 1/2	in.	1.1675	2.335	3.51	4.67	5.84	7.02	8.18	9.35	10.52	11.69	12.85	14.03	15.19	16.36	17.53	18.70
5 3/4	in.	1.2225	2.445	3.67	4.89	6.11	7.34	8.56	9.77	11.00	12.22	13.44	14.67	15.88	17.10	18.33	19.55
6	in.	1.275	2.55	3.83	5.10	6.38	7.65	8.93	10.20	11.48	12.75	14.03	15.30	16.58	17.85	19.13	20.40
6 1/4	in.	1.3275	2.655	3.99	5.31	6.64	7.97	9.29	10.63	11.95	13.28	14.61	15.94	17.27	18.60	19.92	21.25
6 1/2	in.	1.3825	2.765	4.14	5.53	6.90	8.29	9.67	11.05	12.43	13.81	15.20	16.58	17.95	19.34	20.72	22.10
6 3/4	in.	1.435	2.87	4.30	5.74	7.17	8.61	10.04	11.48	12.91	14.34	15.78	17.22	18.65	20.08	21.51	22.95
7	in.	1.4875	2.975	4.46	5.95	7.44	8.93	10.41	11.90	13.39	14.87	16.36	17.85	19.34	20.83	22.32	23.80
7 1/4	in.	1.54	3.08	4.62	6.16	7.70	9.25	10.78	12.32	13.86	15.40	16.94	18.49	20.03	21.57	23.11	24.65
7 1/2	in.	1.59	3.18	4.78	6.36	7.97	9.57	11.16	12.75	14.34	15.94	17.53	19.13	20.72	22.32	23.92	25.50
7 3/4	in.	1.645	3.29	4.94	6.58	8.23	9.88	11.53	13.18	14.82	16.47	18.12	19.77	21.41	23.05	24.70	26.35
8	in.	1.70	3.40	5.10	6.80	8.50	10.20	11.90	13.60	15.30	17.00	18.70	20.40	22.10	23.80	25.50	27.20
8 1/4	in.	1.7525	3.505	5.26	7.01	8.76	10.52	12.27	14.03	15.78	17.53	19.28	21.04	22.79	24.55	26.30	28.05
8 1/2	in.	1.8055	3.61	5.42	7.22	9.03	10.84	12.64	14.44	16.26	18.06	19.86	21.68	23.48	25.30	27.10	28.90
8 3/4	in.	1.8575	3.715	5.58	7.43	9.29	11.16	13.02	14.87	16.74	18.59	20.45	22.32	24.17	26.04	27.89	29.75
9	in.	1.9125	3.825	5.74	7.65	9.56	11.48	13.40	15.30	17.22	19.13	21.04	22.96	24.86	26.78	28.69	30.60
9 1/4	in.	1.965	3.93	5.90	7.86	9.83	11.87	13.76	15.73	17.69	19.65	21.62	23.59	25.55	27.52	29.49	31.45
9 1/2	in.	2.02	4.04	6.06	8.08	10.10	12.12	14.14	16.11	18.18	20.19	22.21	24.23	26.24	28.26	30.28	32.30
9 3/4	in.	2.0725	4.145	6.22	8.29	10.36	12.44	14.51	16.58	18.65	20.72	22.79	24.86	26.94	29.01	31.08	33.15
10	in.	2.125	4.25	6.38	8.50	10.62	12.75	14.88	17.00	19.14	21.25	23.38	25.50	27.62	29.75	31.88	34.00
10 1/4	in.	2.1775	4.355	6.54	8.71	10.89	13.07	15.25	17.42	19.61	21.78	23.96	26.14	28.32	30.50	32.67	34.85
10 1/2	in.	2.23	4.46	6.70	8.92	11.16	13.39	15.62	17.85	20.08	22.32	24.54	26.78	29.00	31.24	33.48	35.70
10 3/4	in.	2.285	4.57	6.86	9.14	11.42	13.71	15.99	18.28	20.56	22.85	25.13	27.42	29.69	31.98	34.28	36.55
11	in.	2.335	4.67	7.02	9.34	11.68	14.07	16.36	18.70	21.02	23.38	25.70	28.05	30.40	32.72	35.06	37.40
11 1/4	in.	2.3925	4.785	7.17	9.57	11.95	14.35	16.74	19.13	21.51	23.91	26.30	28.68	31.08	33.47	35.86	38.25
11 1/2	in.	2.445	4.89	7.32	9.78	12.22	14.68	17.12	19.55	22.00	24.44	26.88	29.33	31.76	34.21	36.66	39.10
11 3/4	in.	2.50	5.00	7.49	10.00	12.49	14.99	17.49	19.97	22.48	24.97	27.47	29.97	32.46	34.95	37.46	39.95
12	in.	2.55	5.10	7.65	10.20	12.75	15.30	17.85	20.40	22.95	25.50	28.05	30.60	33.15	35.70	38.25	40.80
12 1/4	in.	2.605	5.23	7.83	10.63	13.18	15.85	18.34	21.00	23.60	26.20	28.80	31.40	34.00	36.60	39.20	41.80
12 1/2	in.	2.6575	5.35	8.02	11.06	13.61	16.33	18.82	21.50	24.16	26.82	29.48	32.14	34.80	37.46	40.12	42.78
12 3/4	in.	2.71	5.45	8.22	11.49	14.08	16.80	19.28	22.00	24.68	27.34	30.00	32.66	35.32	37.98	40.64	43.30
13	in.	2.765	5.58	8.42	11.91	14.58	17.36	20.82	23.80	26.78	29.74	32.72	35.71	38.67	41.65	44.63	47.60
13 1/4	in.	2.8175	5.695	8.56	12.15	14.94	17.74	21.22	24.10	27.00	30.00	33.00	36.00	39.00	42.00	45.00	48.00
13 1/2	in.			8.75	12.36	15.20	18.00	21.60	24.48	27.36	30.24	33.12	36.00	38.88	41.76	44.64	47.52
13 3/4	in.			8.90	12.57	15.45	18.24	21.99	24.88	27.76	30.64	33.52	36.40	39.28	42.16	45.04	47.92
14	in.	3.40	6.80	10.20	13.60	17.00	20.40	23.80	27.20	30.60	34.00	37.40	40.80	44.20	47.60	51.00	54.40
14 1/4	in.	3.61	7.22	11.84	14.44	18.06	21.68	25.28	28.89	32.52	36.12	39.72	43.32	46.92	50.52	54.12	57.72
14 1/2	in.	3.825	7.65	11.48	15.30	19.12	22.66	26.79	30.60	34.44	38.25	42.08	45.89	49.72	53.56	57.38	61.20
14 3/4	in.	4.04	8.08	12.10	16.16	20.20	24.24	28.28	32.31	36.34	40.37	44.42	48.46	52.48	56.52	60.57	64.60
15	in.	4.25	8.50	12.76	17.00	21.24	25.50	29.75	34.00	38.27	42.50	46.74	51.00	55.25	59.50	63.76	68.00
15 1/4	in.	4.46	8.92	13.40	17.84	22.32	26.78	31.24	35.70	40.16	44.44	48.68	52.93	57.18	61.43	65.68	69.93
15 1/2	in.	4.6725	9.345	14.04	18.69	23.36	28.06	32.72	37.40	42.04	46.76	51.40	56.10	60.79	65.49	70.13	74.80
15 3/4	in.	4.89	9.78	14.64	19.56	24.44	29.33	34.24	39.10	44.00	48.88	53.76	58.66	63.53	68.43	73.32	78.20
16	in.	5.10	10.20	15.32	20.40	25.52	30.60	35.72	40.80	45.92	51.00	56.12	61.20	66.29	71.40	76.50	81.60
16 1/4	in.	5.315	10.63	15.96	21.26	26.56	31.88	37.20	42.50	47.80	53.12	58.44	63.76	69.06	74.38	79.68	85.00
16 1/2	in.	5.53	11.06	16.56	22.12	27.62	33.16	38.68	44.20	49.73	55.24	60.76	66.28	71.82	77.36	82.88	88.40
16 3/4	in.	5.74	11.48	17.20	22.96	28.68	34.44	40.17	45.92	51.64	57.37	63.11	68.88	74.58	80.33	86.07	91.80
17	in.	5.95	11.90	17.													

WEIGHTS OF STEEL ANGLES

Estimated weight per lineal foot in pounds.

Size in inches		Thickness in Inches														
		1/8	3/16	7/32	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	1
8	x 8	...	...	...	...	...	...	...	26.4	29.6	32.7	35.8	38.9	42.0	45.0	51.0
7	x 3 1/2	...	...	...	...	...	...	15.0	17.0	19.1	21.0	23.0	24.9	26.8	28.7	32.3
6	x 6	...	...	...	...	...	14.9	17.2	19.6	21.9	24.2	26.5	28.7	31.0	33.1	37.4
6	x 4	...	...	...	...	...	12.3	14.3	16.2	18.1	20.0	21.8	23.6	25.4	27.2	30.6
6	x 3 1/2	...	...	...	...	...	11.7	13.5	15.3	17.1	18.9	20.6	22.4	24.0	25.7	28.9
5	x 4	...	...	...	...	...	12.3	14.3	16.2	18.1	20.0	21.8	23.6	25.4	27.2	30.6
5	x 3 1/2	...	...	...	...	...	11.0	12.8	14.5	16.2	17.8	19.5	21.1	22.7	24.2	...
5	x 3	...	...	...	...	...	8.7	10.4	12.0	13.6	15.2	16.8	18.3	19.8	21.3	22.7
4 1/2	x 3	...	...	...	...	...	8.2	9.8	11.3	12.8	14.3	15.7	17.1	18.5	19.9	...
4	x 4	...	...	...	...	...	7.7	9.1	10.6	11.9	13.3	14.7	16.0	17.3	18.5	...
4	x 3 1/2	...	5.2	...	6.6	...	8.2	9.8	11.3	12.8	14.3	15.7	17.1	18.5	19.9	...
4	x 3	...	...	...	...	...	7.7	9.1	10.6	11.9	13.3	14.7	16.0	17.3	18.5	...
3 3/4	x 2 5/8	...	...	...	...	...	7.2	8.5	9.8	11.1	12.4	13.6	14.8	16.0	17.1	...
3 3/4	x 3 1/2	...	...	...	...	...	6.4	7.7	8.8	10.0	11.2	12.3	13.4	14.5	15.6	...
3 3/4	x 3	...	...	...	...	...	5.7	7.2	8.5	9.8	11.1	12.4	13.6	14.8	16.0	17.1
3 1/2	x 3	...	...	...	...	...	6.6	7.9	9.1	10.2	11.4	12.5	13.6	14.7	15.8	...
3 1/2	x 2 1/2	...	...	...	...	...	4.9	6.1	7.2	8.3	9.4	10.4	11.5	12.5	...	...
3 1/2	x 3 1/4	...	...	...	...	...	4.9	6.1	7.8	9.0	10.2	11.4	12.5	13.6	14.7	...
3 1/4	x 2	...	...	...	...	...	4.3	5.3	6.3	7.2	8.1	9.0	...	...	...	...
3 1/4	x 3	2.5	3.7	...	4.9	6.1	7.2	8.3	9.4	10.4	11.5	12.4	13.4	14.4	...	...
3	x 2 1/2	...	...	...	...	...	3.4	4.5	5.6	6.6	7.6	8.5	9.5	...	...	...
3	x 2	...	...	...	...	...	3.1	3.6	4.1	5.0	5.9	6.8	7.7	...	...	...
2 3/4	x 2 3/4	2.3	3.4	...	4.5	5.6	6.6	7.6	8.5	...	...	...	...	...	...	...
2 3/4	x 2 1/2	2.1	3.1	3.6	4.1	5.0	5.9	6.8	7.7	8.5	9.3	10.1	...	...	...	...
2 1/2	x 2	...	...	...	...	...	3.7	4.5	5.3	6.1	6.8	...	...	...	...	...
2 1/2	x 1 3/4	...	...	...	...	...	3.4	...	...	...	...	...	...	...	...	...
2 1/2	x 1 1/2	...	...	...	...	...	3.2	3.9	4.6	5.3	6.0	...	...	...	...	...
2 1/2	x 1 1/4	1.9	2.4	...	3.7	4.5	5.3	6.1	6.8	...	...	...	...	...	...	...
2 1/4	x 1 1/2	...	2.3	...	3.0	3.7	4.4	5.0	5.6	...	...	...	...	...	...	...
2 1/4	x 2	...	1.7	2.5	...	3.2	4.0	4.7	5.3	...	...	...	...	...	...	...
2	x 1 1/2	...	...	2.2	...	2.8	3.4	4.0	...	...	...	...	...	...	...	...
2	x 1 1/4	...	...	2.1	...	2.7	3.3	3.8	...	...	...	...	...	...	...	...
1 3/4	x 1 3/4	1.4	2.2	...	2.8	3.4	4.0	4.6	...	...	...	...	...	...	...	...
1 3/4	x 1 1/2	...	...	2.0	...	2.6	3.3	3.9	...	...	...	...	...	...	...	...
1 3/4	x 1 1/4	...	1.8	...	2.4	2.9	3.4	...	...	...	...	...	...	...	...	...
1 3/4	x 1	...	...	1.6	...	...	...	...	...	...	...	...	...	...	...	...
1 3/8	x 7/8	...	0.9	1.3	...	1.9	...	...	...	...	...	...	...	...	...	...
1 1/4	x 1 1/4	...	1.1	1.5	...	2.0	...	...	...	...	...	...	...	...	...	...
1 1/4	x 1 1/8	...	0.9	1.3	...	1.7	2.1	...	...	...	...	...	...	...	...	...
1 1/4	x 1	...	0.8	1.2	...	1.5	...	...	...	...	...	...	...	...	...	...
1	x 3/4	...	0.7	1.0	...	...	...	...	...	...	...	...	...	...	...	...
1	x 3/8	...	0.6	0.9	...	...	...	...	...	...	...	...	...	...	...	...
7/8	x 3/4	...	0.7	1.0	...	...	...	...	...	...	...	...	...	...	...	...
3/4	x 3/8	...	0.6	0.9	...	...	...	...	...	...	...	...	...	...	...	...
5/8	x 5/8	...	0.5	...	...	...	...	...	...	...	...	...	...	...	...	...
1/2	x 1/2	...	0.4	...	...	...	...	...	...	...	...	...	...	...	...	...

ESTIMATED WEIGHTS OF FLAT IRON

Per Lineal Foot in Pounds

Width in inches		Thickness in Inches														
		1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2
1	...	21	42	63	84	105	126	147	168	211	253	...	...	...	...	...
1 1/8	...	24	47	71	95	118	142	166	190	237	284	...	...	...	...	...
1 1/4	...	26	53	79	105	132	158	184	211	263	316	368	421	...	...	...
1 3/8	...	29	58	87	116	145	174	203	232	289	347	405	463	...	...	...
1 1/2	...	32	63	95	126	158	190	221	253	316	379	442	505	...	...	...
1 5/8	...	34	68	103	137	171	205	239	274	342	411	479	547	...	...	...
1 3/4	...	37	74	111	147	184	221	258	295	368	442	516	589	...	...	...
2	...	42	84	126	163	201	237	274	311	395	479	563	647	...	...	...
2 1/8	...	47	95	142	180	218	256	294	332	421	516	611	706	...	...	...
2 1/4	...	53	105	158	201	243	285	327	369	463	563	663	763	...	...	...
2 3/8	...	58	116	174	222	269	316	363	410	505	611	716	821	...	...	...
2 1/2	...	63	126	190	243	294	341	388	435	532	643	753	863	...	...	...
3	...	68	137	205	264	316	363	410	457	563	679	795	911	...	...	...
3 1/8	...	74	147	221	285	341	395	442	489	595	716	837	958	...	...	...
3 1/4	...	79	158	237	301	357	410	457	504	611	732	853	974	...	...	...
3 3/8	...	84	163	253	316	372	425	472	519	626	747	868	989	...	...	...
4	...	89	174	264	327	383	436	483	530	637	758	879	1000	...	...	...
4 1/8	...	95	190	284	341	395	442	489	536	643	764	885	1006	...	...	...
5	...	105	211	316	421	526	632	737	842	1053	1263	1474	1684	...	...	...
5 1/8	...	116	232	347	463	579	695	810	926	1158	1389	1621	1852	...	...	...
6	...	126	253	379	505	632	758	884	1010	1263	1516	1768	2021	...	...	...
7	...	147	294	442	590	736	884	1032	1179	1474	1768	2064	2358	...	...	...
8	...	168	336	505	674	842	1010	1178	1346	1684	2020	2358	2694	...	...	...

For List of Sizes of Iron, see Index.

ESTIMATED WEIGHTS OF BLACK SHEETS

U. S. Gauge	10	12	14	15	16	18	20	22	24	26	27	28	29	30
Lbs. Sq. Ft.	5.625	4.375	3.125	2.8125	2.50	2.00	1.50	1.25	1.00	.75	.6875	.625	.5625	.50
Thick. Ins.	9-64	7-64	5-64	9-128	1-16	1-20	3-80	1-32	1-40	3-160	11-640	1-64	9-640	1-80
24 x 96	90.00	70.00	50.00	45.00	40.00	32.00	24.00	20.00	16.00	12.00	11.00	10.00	9.00	8.00
101	94.69	73.65	52.68	47.34	42.08	33.67	25.25	21.04	16.84	12.63	11.57	10.52	9.47	8.42
108	101.25	78.75	56.25	50.62	45.00	36.00	27.00	22.50	18.00	13.50	12.38	11.25	10.13	9.00
120	112.50	87.50	62.50	56.25	50.00	40.00	30.00	25.00	20.00	15.00	13.75	12.50	11.25	10.00
138	129.38	100.63	71.88	64.69	57.50	46.00	34.50	28.75	23.00	17.25	15.81	14.38	13.00	11.67
144	135.00	105.00	75.00	67.50	60.00	48.00	36.00	30.00	24.00	18.00	16.50	15.00	13.67	12.33
26 x 96	97.50	75.83	54.17	48.75	43.33	34.67	26.00	21.67	17.34	13.00	11.92	10.83	9.75	8.67
101	102.58	79.78	57.00	51.29	45.59	36.47	27.35	22.79	18.24	13.68	12.54	11.40	10.26	9.12
108	109.69	85.31	60.94	54.84	48.75	39.00	29.25	24.37	19.50	14.63	13.41	12.19	10.97	9.75
120	121.88	94.79	67.71	60.94	54.17	43.33	32.50	27.08	21.67	16.25	14.90	13.54	12.19	10.83
138	140.16	109.01	77.87	70.08	62.29	49.83	37.38	31.15	24.92	18.69	17.13	15.57	14.00	12.50
144	146.25	113.75	81.25	73.13	65.00	52.00	39.00	32.50	26.00	19.50	17.88	16.25	14.63	13.00
28 x 96	105.00	81.67	58.33	52.50	46.67	37.33	28.00	23.33	18.67	14.00	12.83	11.67	10.50	9.33
101	110.47	85.92	61.37	55.23	49.09	39.28	29.46	24.55	19.64	14.73	13.50	12.27	11.05	9.82
108	118.13	91.88	65.63	59.06	52.50	42.00	31.50	26.25	21.00	15.75	14.44	13.13	11.81	10.50
120	131.25	102.08	72.92	65.63	58.33	46.67	35.00	29.17	23.33	17.50	16.04	14.58	13.13	11.67
30 x 96	112.50	87.50	62.50	56.25	50.00	40.00	30.00	25.00	20.00	15.00	13.75	12.50	11.25	10.00
101	118.36	92.60	65.76	59.18	52.60	42.08	31.56	26.30	21.04	15.78	14.47	13.15	11.83	10.50
108	126.56	98.44	70.31	62.69	56.25	45.00	33.75	28.12	22.50	16.88	15.47	14.06	12.65	11.25
120	140.63	109.38	78.13	70.31	62.50	50.00	37.50	31.25	25.00	18.75	17.19	15.63	14.06	12.50
138	161.72	125.78	89.84	80.86	71.88	57.50	43.13	35.94	28.75	21.56	19.77	17.97	16.17	14.38
144	168.75	131.25	93.75	84.38	75.00	60.00	45.00	37.50	30.00	22.50	20.63	18.75	16.88	15.00
36 x 77	108.28	84.22	60.17	54.14	48.13	38.50	28.88	24.06	19.25	14.44	13.23	12.03	10.83	9.63
96	135.00	105.00	75.00	67.50	60.00	48.00	36.00	30.00	24.00	18.00	16.50	15.00	13.50	12.00
108	151.88	118.13	84.38	75.94	67.50	54.00	40.50	33.75	27.00	20.25	18.56	16.88	15.20	13.52
120	168.75	131.25	93.75	84.38	75.00	60.00	45.00	37.50	30.00	22.50	20.63	18.75	16.88	15.00
138	194.06	145.47	107.81	97.03	86.25	69.00	51.75	43.13	34.50	25.88	23.72	21.56	19.40	17.24
144	202.50	157.50	112.50	101.25	90.00	72.00	54.00	45.00	36.00	27.00	24.75	22.50	20.25	18.00
42 x 77	126.33	98.26	70.18	63.16	56.14	44.92	33.69	28.07	22.46	16.84	15.44	14.04	12.64	11.24
96	157.50	122.59	87.50	78.75	70.00	56.00	42.00	35.00	28.00	21.00	19.25	17.50	15.75	14.00
108	177.18	137.81	98.44	88.59	78.75	63.00	47.25	39.37	31.50	23.63	21.66	19.69	17.72	15.75
120	196.88	153.13	109.38	98.44	87.50	70.00	52.51	43.75	35.00	26.25	24.06	21.88	19.69	17.50
138	226.41	176.09	125.78	113.20	100.63	80.50	60.38	50.31	40.25	30.19	27.67	25.16	22.65	20.14
144	236.25	183.75	131.25	118.13	105.00	84.00	63.00	52.50	42.00	31.50	28.88	26.24	23.63	21.00
48 x 77	144.38	112.29	80.21	72.19	64.17	51.33	38.50	32.08	25.67	19.25	17.65	16.04	14.43	12.82
96	180.00	140.00	100.00	90.00	80.00	64.00	48.00	40.00	32.00	24.00	22.00	20.00	18.00	16.00
108	202.50	157.50	112.50	101.25	90.00	72.00	54.00	45.00	36.00	27.00	24.75	22.50	20.25	18.00
120	225.00	175.00	125.00	112.50	100.00	80.00	60.00	50.00	40.00	30.00	27.50	25.00	22.50	20.00
138	258.75	201.25	143.75	129.38	115.00	92.00	69.00	57.50	46.00	34.50	31.63	28.75	25.88	23.00
144	270.00	210.00	150.00	135.00	120.00	96.00	72.00	60.00	48.00	36.00	33.00	30.00	27.00	24.00
54 x 77	162.42	126.33	90.26	81.24	72.22	58.18	44.14	36.11	28.08	21.05	19.02	17.00	15.00	13.00
96	201.50	157.50	112.50	101.25	90.00	72.00	54.00	45.00	36.00	27.00	24.75	22.50	20.25	18.00
108	227.82	177.20	126.57	113.25	100.63	80.50	60.38	50.31	40.25	30.19	27.67	25.16	22.65	20.14
120	253.12	196.88	140.63	126.56	112.50	90.00	67.50	55.00	42.50	30.00	27.50	25.00	22.50	20.00
138	291.09	218.21	161.71	145.71	129.38	104.69	79.69	64.69	50.69	35.69	32.69	29.69	26.69	23.69
144	303.75	236.25	168.75	150.00	135.00	110.00	85.00	70.00	55.00	40.00	36.00	32.00	28.00	24.00
60 x 77	180.48	140.36	100.24	90.12	80.00	64.00	48.00	40.00	32.00	24.00	22.00	20.00	18.00	16.00
96	225.00	175.00	125.00	112.50	100.00	80.00	60.00	50.00	40.00	30.00	27.50	25.00	22.50	20.00
108	253.12	196.88	140.63	126.56	112.50	90.00	67.50	55.00	42.50	30.00	27.50	25.00	22.50	20.00
120	281.25	219.38	161.71	145.71	129.38	104.69	79.69	64.69	50.69	35.69	32.69	29.69	26.69	23.69
138	328.44	251.56	187.68	168.75	150.00	120.00	96.00	72.00	58.00	44.00	39.00	34.00	30.00	26.00
144	337.50	262.50	196.88	175.00	156.25	125.00	100.00	75.00	60.00	45.00	40.00	35.00	30.00	25.00

NOTE

Above estimated weights are based on U. S. Standard gauge for Iron. For Steel, add 2 per cent. These figures are given for convenience in estimating only, and may vary somewhat in actual practice. The sizes below the heavy black line will probably considerably exceed the weights given, and it is safe therefore, to allow for an overweight of at least 10 per cent.

ESTIMATING WEIGHTS OF IRON AND STEEL

Thickness in inches	Wt. per Sq. Ft.	Thickness in inches	Wt. per Sq. Ft.	Thickness in inches	Wt. per Sq. Ft.
Iron	Steel	Iron	Steel	Iron	Steel
1-32	1.263	1.35	13-32	16.42	16.75
1-16	2.526	2.75	7-16	17.68	18.50
3-32	3.789	4.00	15-32	18.95	19.25
1-8	5.052	5.35	1-2	20.21	21.00
5-32	6.315	6.75	9-16	22.73	23.50
3-16	7.578	7.85	5-8	25.25	26.00
7-32	8.841	9.25	11-16	27.79	28.50
1-4	10.10	11.00	3-4	30.31	31.00
9-32	11.37	12.00	13-16	32.84	33.50
5-16	12.63	13.50	7-8	35.37	36.00
11-32	13.89	14.25	15-16	37.89	38.50
3-8	15.16	16.00	1	40.42	41.00

USEFUL INFORMATION

WEIGHTS OF PIPE FITTINGS

In Pounds, Per Hundred

Size, inches	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
Bushings	5	13	25	45	58	71	104	163	218	300	312	375	612
Caps, cast											750	800	1500
Caps, malleable	13	23	34	57	73	121	205	229	290	455			
Couplings	15	25	46	61	85	140	150	265	400	440	575	975	1050
Couplings, R. & L.	18	31	43	70	100	130							
Crosses, malleable	25	45	80	145	195	315	540	945	1100	1575			
Elbows, cast	40	70	100	145	180	290	535	740	1100	1400	1585	2200	3400
Elbows, malleable	25	40	60	90	125	190	310	510	855	960			
Elbows, 45°, cast	40	55	85	130	160	250	415	565	800	1000	1300	1500	2400
Elbows, 45°, malleable	22	35	60	90	110	200	275	355	430	480			
Elbows, malleable, street	25	40	65	90	135	220	395						
Flange unions, cast			260	395	440	640	820	1020	1120	1580	1740	2340	2580
Flange unions, malleable			165	275	440	640	815	1025	1415	1525	1800	2400	2765
Lock-nuts, malleable	6	10	16	18	30	47							
Nipples, close	6	11	16	21	25	50	80	120	140	180		265	335
Nipples, per inch	6	8	10	15	17	26	40	48	63	65		100	125
Plugs	9	15	20	35	50	80	120	140	260	300	420	500	630
Reducers, cast											1050	1400	1900
Reducers, malleable	12	25	35	50	80	125	220	300	460	465			
Return bends, cast, close pattern		90	140	200	290	510	720	1000					
Return bends, cast, open pattern		120	175	270	350	560	1000	1350					
Return bends, malleable, close pat.	39	65	90	135	205	300							
Return bends, malleable, open pat.	40	70	120	165	250	340	515	840					
Tees, cast	65	85	135	190	270	425	755	1065	1375	2045	2200	2925	3470
Tees, malleable	25	45	80	115	160	240	410	650	890	1210			
Tees, reducing	65	95	150	210	300	470	830	1175	1510	2250	2420	3220	3820
Unions, malleable	50	75	100	125	150	250	440	515					

WEIGHTS OF COCKS AND BRASS VALVES

In Pounds, Each

Size, inches	½	¾	1	1¼	1½	2	2½	3	3½	4
Cocks, asbestos packed	1	1½	2	4	7	11	14	20	35	58
Cocks, bibb			1	2	3	4				
Cocks, brass service			½	¾	1	1½	2	3		
Cocks, brass steam	½	½	½	1	1½	2	4	6		
Cocks, rough stop			1	1½	2	4	5	8		
Cocks, straight-way, all iron			1½	2½	4½	7	11	18	28	41
Cocks, straight-way, brass plug			1½	3	5	7	11	19	29	57
Cocks, 3-way, all iron				4½	6	7	12	20	34	44
Valves, blow-off, Jenkins				2	4	6	9			
Valves, check, horizontal	¼	½	¾	1	1½	2	4	7		
Valves, check, Jenkins swing			½	¾	1½	2½	4	7		
Valves, check, standard horizontal	½	¾	1	1½	2	2½	3	6	8	
Valves, check, standard swing			¾	1	1½	1½	2½	4		
Valves, check, standard vertical			½	¾	1	1½				
Valves, gate, Lunkenheim	¼	½	1	1½	1½	3	5	8		
Valves, gate, Chapman	¼	¾	¾	1	2	3	4	7	11	18
Valves, gate, standard	½	¾	1	2	3	4	6	9	15	20
Valves, globe, Jenkins	1	1	1½	2½	3	5	7	11		
Valves, globe, Lunkenheim	1	1	1½	2	3	4	6	9		
Valves, globe, Standard	¼	¾	½	¾	1½	2	3½	5	8	
Valves, safety, lever			1	1½	2	2	4	7		
Valves, safety pop, standard			8	9	10	13	16	24		
Valves, safety pop, Lunkenheim			1½	2	3	4	5	8	15	18
Valves, throttle, standard					3	6	7	9		
Valves, throttle, Lunkenheim				3	4	5	6	10		
Valves, whistle		½	1	1½	2	3	4	7	10	12

USEFUL INFORMATION

WEIGHTS OF IRON BODY VALVES

In Pounds, Each

Size, inches.....	1	1 ¼	1 ½	2	2 ½	3	3 ½	4	4 ½	5	6	7	8	9	10	12
Blow-off, Jenkins.....	53	64	...	...	...	...	...	...	...	...	...	...
Check, Jenkins horizontal....	28	40	50	64	86	100	142	...	...	...	...	...
Check, Jenkins swing.....	32	44	49	64	...	...	...	...	...	...	...	...
Check, standard horizontal...	14	20	30	52	56	90	125	...	...	...	...	...
Check, standard swing.....	19	30	45	50	...	...	...	...	...	...	...	...
Check, standard vertical....	16	28	39	52	54	...	...	...	...	...	...	...
Foot, with strainer.....	2	3	4	6	7	10	12	16	20	30	45	120	140	...	200	350
Gate, hub end.....	50	...	88	...	...	...	170	280	...	450	680
Gate, standard, screwed.....	20	28	42	50	63	67	102	135	200	240	300	410	415
Gate, standard flanged.....	37	55	60	75	85	125	155	210	280	330	425	...
Gate, Lunkenheimer	4	5	6	10	18	40	45	60	...	...	...	...	...	...	...	...
Gate, Lunkenheimer, all iron.	4	5	6	10	18	40	45	58	...	...	...	...	...	...	...	...
Globe, std, screwed, no yoke.	11	16	23	...	...	...	...	...	...	...	...	...	...
Globe, std, screwed, with yoke	17	22	32	43	54	70	90	130	180	240	...	...	...
Globe, Jenkins screwed.....	22	35	60	70	100	120	140	210	280	380	...	...	...
Globe, Jenkins flanged.....	160	230	...	420	...	...	...
Safety, standard lever.....	20	36	57	80	100	105	125	170	240	290	...	...	...
Safety, standard pop.....	57	75	105	125	...	...	...	...	...	...	...	...
Throttle, standard screwed...	45	50	70	95	...	...	...	...	...	...	...	...
Throttle, Lunkenheimer	35	40	50	65	...	...	...	...	...	...	...	...

WEIGHTS OF FLANGED, EXTRA HEAVY AND LONG SWEEP PIPE FITTINGS

In Pounds, Each

Size, inches.....	1	1 ¼	1 ½	2	2 ½	3	3 ½	4	4 ½	5	6	7	8	9	10	12
Standard flanged tees .....	...	...	...	20	25	40	45	55	60	85	110	145	180	220	235	390
Standard flanged elbows .....	...	...	...	15	18	25	30	40	50	60	70	95	120	145	180	260
Standard flanged crosses .....	...	...	...	30	35	50	60	80	100	120	140	190	240	290	360	520
Extra heavy flanged tees.....	...	...	...	30	40	65	75	90	115	130	180	240	290	330	420	590
Extra heavy flanged elbows...	...	...	...	20	25	45	50	60	80	95	120	160	190	220	300	400
Extra heavy flanged crosses...	...	...	...	40	50	90	100	120	160	190	240	320	380	440	600	800
Extra heavy screwed tees....	1 ½	2	3	5	8	10	13	18	23	28	44	65	85	115	143	205
Extra heavy screwed elbows...	1	1 ½	2	3	6	7	9	12	16	20	32	47	62	84	104	150
Extra heavy screwed crosses	2	2 ½	3	6	10	13	16	21	27	33	51	76	100	135	165	235
Long sweep tees	2	3	4	6	11	15	19	24	30	42	60	92	122	165	210	285
Long sweep elbows	1 ½	2	2 ½	4	7	11	13	16	20	28	40	60	80	110	140	190
Long sweep crosses .....	...	...	5	8	15	22	26	32	...	55	80	125	165	225	290	390

WEIGHTS OF EXPANSION JOINTS

Iron Body. Brass Sleeve

Size, inches.....	2x2 ½	2 ½x2 ½	3x2 ¾	3 ½x3	4x3 ¾	5x4	6x5	7x6	8x7	10x7	12x8
Screwed, each, pounds....	9	13	19	28	36	63	90	120	170	235	390
Flanged, each, pounds....	20	30	35	45	55	80	110	...	200	275	450

WEIGHTS OF BUNDLING SCHEDULE OF PIPE

1 bundle, ¼ inch diameter=179 pounds.	1 bundle, 1 inch diameter=168 pounds.
1 bundle, ⅜ inch diameter=193 pounds.	1 bundle, 1 ¼ inch diameter=137 pounds.
1 bundle, ½ inch diameter=204 pounds.	1 bundle, 1 ½ inch diameter=164 pounds.
1 bundle, ¾ inch diameter=159 pounds.	

TEMPLATES FOR DRILLING

STANDARD AND LOW PRESSURE FLANGED VALVES AND FITTINGS

American Standard

Effective January 1, 1914

Size Inches	Diameter of Flanges Inches	Thickness of Flanges Inches	Bolt Circle Inches	Number of Bolts	Size of Bolts Inches	Length of Bolts Inches	Length of Studs with 2 Nuts Inches
1	4	$\frac{7}{16}$	3	4	$\frac{7}{16}$	$1\frac{1}{2}$	....
$1\frac{1}{4}$	$4\frac{1}{2}$	$\frac{1}{2}$	$3\frac{3}{8}$	4	$\frac{1}{2}$	$1\frac{1}{2}$	....
$1\frac{1}{2}$	5	$\frac{5}{8}$	$3\frac{7}{8}$	4	$\frac{1}{2}$	$1\frac{3}{4}$	....
2	6	$\frac{3}{4}$	$4\frac{3}{4}$	4	$\frac{5}{8}$	2	....
$2\frac{1}{2}$	$7\frac{1}{2}$	$\frac{7}{8}$	$5\frac{1}{2}$	4	$\frac{5}{8}$	$2\frac{1}{4}$	....
3	$7\frac{1}{2}$	$\frac{7}{8}$	6	4	$\frac{5}{8}$	$2\frac{1}{2}$	....
$3\frac{1}{2}$	$8\frac{1}{2}$	$\frac{1}{2}$	7	4	$\frac{5}{8}$	$2\frac{1}{2}$	....
4	9	$\frac{1}{2}$	$7\frac{1}{2}$	4	$\frac{5}{8}$	$2\frac{3}{4}$	....
$4\frac{1}{2}$	$9\frac{1}{4}$	$\frac{1}{2}$	$7\frac{1}{2}$	8	$\frac{3}{4}$	3	....
5	10	$\frac{1}{2}$	$8\frac{1}{2}$	8	$\frac{3}{4}$	3	....
6	11	$\frac{1}{2}$	$9\frac{1}{2}$	8	$\frac{3}{4}$	3	....
7	$12\frac{1}{2}$	$\frac{1}{2}$	$10\frac{3}{4}$	8	$\frac{3}{4}$	3	....
8	$13\frac{1}{2}$	$\frac{1}{2}$	$11\frac{3}{4}$	8	$\frac{3}{4}$	$3\frac{1}{4}$	....
9	15	$\frac{1}{2}$	$13\frac{1}{4}$	12	$\frac{3}{4}$	$3\frac{1}{4}$	....
10	16	$\frac{1}{2}$	$14\frac{1}{4}$	12	$\frac{3}{4}$	$3\frac{1}{2}$	....
12	19	$\frac{1}{2}$	17	12	$\frac{7}{8}$	$3\frac{3}{4}$	....
14	21	$\frac{1}{2}$	$18\frac{3}{4}$	12	$\frac{7}{8}$	$4\frac{1}{4}$	....
15	$22\frac{1}{4}$	$\frac{1}{2}$	20	16	1	$4\frac{1}{4}$	....
16	$23\frac{1}{2}$	$\frac{1}{2}$	$21\frac{1}{4}$	16	1	$4\frac{1}{4}$	....
18	25	$\frac{1}{2}$	$22\frac{3}{4}$	16	$1\frac{1}{4}$	$4\frac{3}{4}$	....
20	$27\frac{1}{2}$	$\frac{1}{2}$	25	20	$1\frac{1}{4}$	5	....
22	$29\frac{1}{2}$	$\frac{1}{2}$	$27\frac{1}{4}$	20	$1\frac{1}{4}$	$5\frac{1}{2}$	....
24	32	$\frac{1}{2}$	$29\frac{1}{2}$	20	$1\frac{1}{4}$	$5\frac{1}{2}$	....
26	$34\frac{1}{4}$	$\frac{1}{2}$	$31\frac{3}{4}$	24	$1\frac{1}{4}$	$5\frac{3}{4}$	....
28	$36\frac{1}{2}$	$\frac{1}{2}$	34	28	$1\frac{1}{4}$	6	....
30	$38\frac{3}{4}$	$\frac{1}{2}$	36	28	$1\frac{3}{8}$	$6\frac{1}{4}$	....
32	$41\frac{3}{4}$	$\frac{1}{2}$	$38\frac{1}{2}$	28	$1\frac{1}{2}$	$6\frac{1}{2}$	....
34	$43\frac{3}{4}$	$\frac{1}{2}$	$40\frac{1}{2}$	32	$1\frac{1}{2}$	$6\frac{1}{2}$	....
36	46	$\frac{1}{2}$	$42\frac{3}{4}$	32	$1\frac{1}{2}$	7	....
38	$48\frac{3}{4}$	$\frac{1}{2}$	$45\frac{1}{4}$	32	$1\frac{3}{8}$	7	9
40	$50\frac{3}{4}$	$\frac{1}{2}$	$47\frac{1}{4}$	36	$1\frac{3}{8}$	7	9
42	53	$\frac{1}{2}$	$49\frac{1}{2}$	36	$1\frac{3}{8}$	$7\frac{1}{2}$	$9\frac{1}{2}$
44	$55\frac{1}{4}$	$\frac{1}{2}$	$51\frac{3}{4}$	40	$1\frac{3}{8}$	$7\frac{1}{2}$	$9\frac{1}{2}$
46	$57\frac{1}{4}$	$\frac{1}{2}$	$53\frac{3}{4}$	40	$1\frac{3}{8}$	$7\frac{1}{2}$	$9\frac{1}{2}$
48	$59\frac{1}{2}$	$\frac{1}{2}$	56	44	$1\frac{5}{8}$	8	$9\frac{1}{2}$
50	$61\frac{3}{4}$	$\frac{1}{2}$	$58\frac{1}{4}$	44	$1\frac{3}{4}$	8	10
52	64	$\frac{1}{2}$	$60\frac{1}{2}$	44	$1\frac{3}{4}$	8	$10\frac{1}{2}$
54	$66\frac{1}{4}$	$\frac{1}{2}$	62	44	$1\frac{3}{4}$	$8\frac{1}{2}$	$10\frac{1}{2}$
56	$68\frac{3}{4}$	$\frac{1}{2}$	$65\frac{1}{2}$	48	$1\frac{3}{4}$	$8\frac{1}{2}$	$10\frac{1}{2}$
58	71	$\frac{1}{2}$	$67\frac{1}{4}$	48	$1\frac{3}{4}$	9	11
60	73	$\frac{1}{2}$	$69\frac{1}{4}$	52	$1\frac{3}{4}$	9	11
62	$75\frac{3}{4}$	$\frac{1}{2}$	$71\frac{3}{4}$	52	$1\frac{7}{8}$	9	$11\frac{1}{2}$
64	78	$\frac{1}{2}$	74	52	$1\frac{7}{8}$	9	$11\frac{1}{2}$
66	80	$\frac{1}{2}$	76	52	$1\frac{7}{8}$	$9\frac{1}{2}$	$11\frac{1}{2}$
68	$82\frac{1}{4}$	$\frac{1}{2}$	$78\frac{1}{4}$	56	$1\frac{7}{8}$	$9\frac{1}{2}$	$11\frac{1}{2}$
70	$84\frac{1}{2}$	$\frac{1}{2}$	$80\frac{1}{2}$	56	$1\frac{7}{8}$	10	12
72	$86\frac{1}{2}$	$\frac{1}{2}$	$82\frac{1}{2}$	60	$1\frac{7}{8}$	10	12
74	$88\frac{1}{2}$	$\frac{1}{2}$	$84\frac{1}{2}$	60	$1\frac{7}{8}$	10	12
76	$90\frac{3}{4}$	$\frac{1}{2}$	$86\frac{1}{2}$	60	$1\frac{7}{8}$	10	12
78	93	$\frac{1}{2}$	$88\frac{3}{4}$	60	$1\frac{7}{8}$	$10\frac{1}{4}$	$12\frac{1}{2}$
80	$95\frac{1}{4}$	$\frac{1}{2}$	91	60	2	$10\frac{1}{2}$	$12\frac{1}{2}$
82	$97\frac{1}{2}$	$\frac{1}{2}$	$93\frac{1}{4}$	60	2	$10\frac{1}{2}$	13
84	$99\frac{3}{4}$	$\frac{1}{2}$	$95\frac{1}{2}$	64	2	$10\frac{1}{2}$	13
86	102	$\frac{1}{2}$	97	64	2	11	13
88	$104\frac{1}{4}$	$\frac{1}{2}$	100	68	2	11	13
90	$106\frac{1}{2}$	$\frac{1}{2}$	$102\frac{1}{4}$	68	$2\frac{1}{8}$	$11\frac{1}{2}$	14
92	$108\frac{3}{4}$	$\frac{1}{2}$	$104\frac{1}{2}$	68	$2\frac{1}{8}$	$11\frac{1}{2}$	14
94	111	$\frac{1}{2}$	$106\frac{1}{4}$	68	$2\frac{1}{8}$	$11\frac{1}{2}$	14
96	$113\frac{1}{4}$	$\frac{1}{2}$	$108\frac{1}{2}$	68	$2\frac{1}{4}$	$11\frac{1}{2}$	$14\frac{1}{2}$
98	$115\frac{1}{2}$	$\frac{1}{2}$	$110\frac{3}{4}$	68	$2\frac{1}{4}$	12	$14\frac{1}{2}$
100	$117\frac{3}{4}$	$\frac{1}{2}$	113	68	$2\frac{1}{4}$	12	$14\frac{1}{2}$

These Drilling Templates are in multiples of four, so that fittings may be made to face in any quarter and bolt holes straddle the center line.

Bolt holes are drilled $\frac{1}{8}$ inch larger than nominal diameter of bolts.

GEO. B. CARPENTER & CO.

TABLE OF THE PROPERTIES OF SATURATED STEAM FROM PEABODY'S TABLES

Gauge Pressure in lbs. Per Sq. Inch	Temperature in Degrees F.	Total Heat in Heat Units From Water at 32° F.	Heat Units in Liquid From 32° F.	Heat of Vaporization in Heat Units	Density of Weight of 1 cu. ft. in lbs.	Volume of 1 lb. in Cubic Feet	Weight of 1 Cu. Foot of Water
0	212.00	1146.6	180.8	965.8	0.03760	26.60	59.76
10	239.36	1154.9	208.4	946.5	0.06128	16.32	59.04
20	258.68	1160.8	227.9	932.9	0.08439	11.85	58.50
30	273.87	1165.5	243.2	922.3	0.1070	9.347	58.07
40	286.54	1169.3	255.9	913.4	0.1292	7.736	57.69
50	297.46	1172.6	266.9	905.7	0.1512	6.612	57.32
55	302.42	1174.2	271.9	902.3	0.1621	6.169	57.22
60	307.10	1175.6	276.6	899.0	0.1729	5.784	57.08
65	311.54	1176.9	281.1	895.8	0.1837	5.443	56.95
70	315.77	1178.2	285.6	892.7	0.1945	5.142	56.82
75	319.80	1179.5	289.8	889.8	0.2052	4.873	56.69
80	323.66	1180.6	293.8	886.9	0.2159	4.633	56.59
85	327.36	1181.8	297.7	884.2	0.2265	4.415	56.47
90	330.92	1182.8	301.5	881.5	0.2371	4.218	56.36
95	334.35	1183.9	305.0	879.0	0.2477	4.037	56.25
100	337.66	1184.9	308.5	876.5	0.2583	3.872	56.18
105	340.86	1185.9	311.8	874.1	0.2689	3.720	56.07
110	343.95	1186.8	315.0	871.8	0.2794	3.589	55.97
115	346.94	1187.7	318.2	869.6	0.2898	3.452	55.87
120	349.85	1188.6	321.2	867.4	0.3003	3.330	55.77
125	352.68	1189.5	324.2	865.3	0.3107	3.219	55.69
130	355.43	1190.3	327.0	863.3	0.3212	3.113	55.58
135	358.10	1191.1	329.8	861.3	0.3315	3.017	55.52
140	360.70	1191.9	332.5	859.4	0.3420	2.924	55.44
145	363.25	1192.8	335.2	857.5	0.3524	2.838	55.36
150	365.73	1193.5	337.8	855.7	0.3629	2.756	55.29
155	368.62	1194.3	340.3	853.9	0.3731	2.681	55.22
160	370.51	1195.0	342.8	852.1	0.3835	2.608	55.15
165	372.83	1195.7	345.2	850.4	0.3939	2.539	55.07
170	375.09	1196.3	347.6	848.7	0.4043	2.474	54.99
175	377.31	1197.0	349.9	847.1	0.4147	2.412	54.93
180	379.48	1197.7	352.2	845.4	0.4251	2.353	54.86
185	381.60	1198.3	354.4	843.9	0.4353	2.297	54.79
190	383.70	1199.0	356.6	842.3	0.4455	2.244	54.73
195	385.75	1199.6	358.8	840.8	0.4559	2.193	54.66
200	387.76	1200.2	360.9	839.2	0.4663	2.145	54.60
225	397.36	1203.1	370.9	832.2	0.5179	1.930	54.27
250	406.07	1205.0	380.0	825.7	0.5699	1.755	54.03
275	414.22	1208.3	388.5	819.8	0.621	1.609	53.77
300	421.83	1210.6	396.5	814.1	0.674	1.483	53.54

CAST IRON PIPE Nominal Weight of a Lineal Foot, Without Flanges

Bore in inches	Thickness of Metal in Inches							
	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2
2	1ba. 6.52	1ba. 8.74	1ba. 12.27	1ba. 16.11	1ba. 20.25	1ba. 24.70	1ba. 29.45	1ba. 34.52
2 1/2	6.75	10.58	14.73	19.18	23.95	28.99	34.36	40.04
3	7.93	12.43	17.18	22.24	27.61	32.29	39.27	45.56
3 1/2	9.20	14.27	19.64	25.31	31.29	37.58	44.18	51.08
4	10.43	16.11	22.09	28.38	34.98	41.88	49.09	56.60
4 1/2	11.66	17.95	24.54	31.45	38.66	46.18	54.00	62.13
5	12.89	19.79	27.00	34.52	42.34	50.47	58.91	67.65
5 1/2	14.11	21.63	29.45	37.58	46.02	54.76	63.81	73.17
6	15.34	23.47	31.91	40.65	49.70	59.06	68.72	78.69
7	17.79	27.15	36.82	46.79	57.06	67.65	78.54	89.74
8	20.26	30.83	41.72	52.92	64.43	76.24	88.36	100.78
9	22.70	34.52	46.63	59.06	71.79	84.83	98.18	111.83
10	25.16	38.20	51.54	65.19	79.15	93.42	107.99	122.87
11	27.61	41.88	56.45	71.33	86.52	102.01	117.81	133.92
12	30.07	46.56	61.36	77.47	93.88	110.60	127.63	144.96
13	32.52	49.24	66.27	83.60	101.24	119.19	137.45	156.01
14	34.98	52.92	71.18	89.74	108.61	127.78	147.26	167.05
15		56.60	76.09	95.87	115.97	136.37	157.08	178.10
16		60.29	80.99	102.01	123.33	144.96	166.90	189.14
18		67.65	90.81	114.28	138.06	162.14	186.53	211.23
20			100.63	126.55	152.79	179.32	206.17	233.32
22			110.45	138.83	167.51	196.50	225.80	255.41
24			120.26	151.10	182.24	213.68	245.44	277.50

Note—For each flanged joint add a foot in length of the pipe.

PARCEL POST INFORMATION AND RATES



Weight pounds	Local rate	First Zone	Second Zone	Third Zone	Fourth Zone	Fifth Zone	Sixth Zone	Seventh Zone	Eighth Zone
1	\$0.05	\$0.05	\$0.05	\$0.06	\$0.07	\$0.08	\$0.09	\$0.11	\$0.12
2	.06	.06	.06	.08	.11	.14	.17	.21	.24
3	.06	.07	.07	.10	.15	.20	.25	.31	.36
4	.07	.08	.08	.12	.19	.26	.32	.41	.48
5	.07	.09	.09	.14	.23	.32	.41	.51	.60
6	.08	.10	.10	.16	.27	.38	.49	.61	.72
7	.08	.11	.11	.18	.31	.44	.57	.71	.84
8	.09	.12	.12	.20	.35	.50	.65	.81	.96
9	.09	.13	.13	.22	.39	.56	.73	.91	1.08
10	.10	.14	.14	.24	.43	.62	.81	1.01	1.20
11	.10	.15	.15	.26	.47	.68	.89	1.11	1.32
12	.11	.16	.16	.28	.51	.74	.97	1.21	1.44
13	.11	.17	.17	.30	.55	.80	1.05	1.31	1.56
14	.12	.18	.18	.32	.59	.86	1.13	1.41	1.68
15	.12	.19	.19	.34	.63	.92	1.21	1.51	1.80
16	.13	.20	.20	.36	.67	.98	1.29	1.61	1.92
17	.13	.21	.21	.38	.71	1.04	1.37	1.71	2.04
18	.14	.22	.22	.40	.75	1.10	1.45	1.81	2.16
19	.14	.23	.23	.42	.79	1.16	1.53	1.91	2.28
20	.15	.24	.24	.44	.83	1.22	1.61	2.01	2.40
21	.15	.25	.25						
22	.16	.26	.26						
23	.16	.27	.27						
24	.17	.28	.28						
25	.17	.29	.29						
26	.18	.30	.30						
27	.18	.31	.31						
28	.19	.32	.32						
29	.19	.33	.33						
30	.20	.34	.34						
31	.20	.35	.35						
32	.21	.36	.36						
33	.21	.37	.37						
34	.22	.38	.38						
35	.22	.39	.39						
36	.23	.40	.40						
37	.23	.41	.41						
38	.24	.42	.42						
39	.24	.43	.43						
40	.25	.44	.44						
41	.25	.45	.45						
42	.26	.46	.46						
43	.26	.47	.47						
44	.27	.48	.48						
45	.27	.49	.49						
46	.28	.50	.50						
47	.28	.51	.51						
48	.29	.52	.52						
49	.29	.53	.53						
50	.30	.54	.54						

PARCEL POST RATES

The Local Rate applies to deliveries made within the limits of the Chicago postal district—the Zone Rate applies to deliveries beyond that district.

Parcels weighing four ounces or less are mailable at the rate of 1 cent per ounce or fraction of an ounce, regardless of distance. All other parcels are mailable at rates in table herewith. A fraction of a pound is considered a full pound.

Limit of delivery weight in first and second Zones, 50 pounds; all other Zones, 20 pounds.

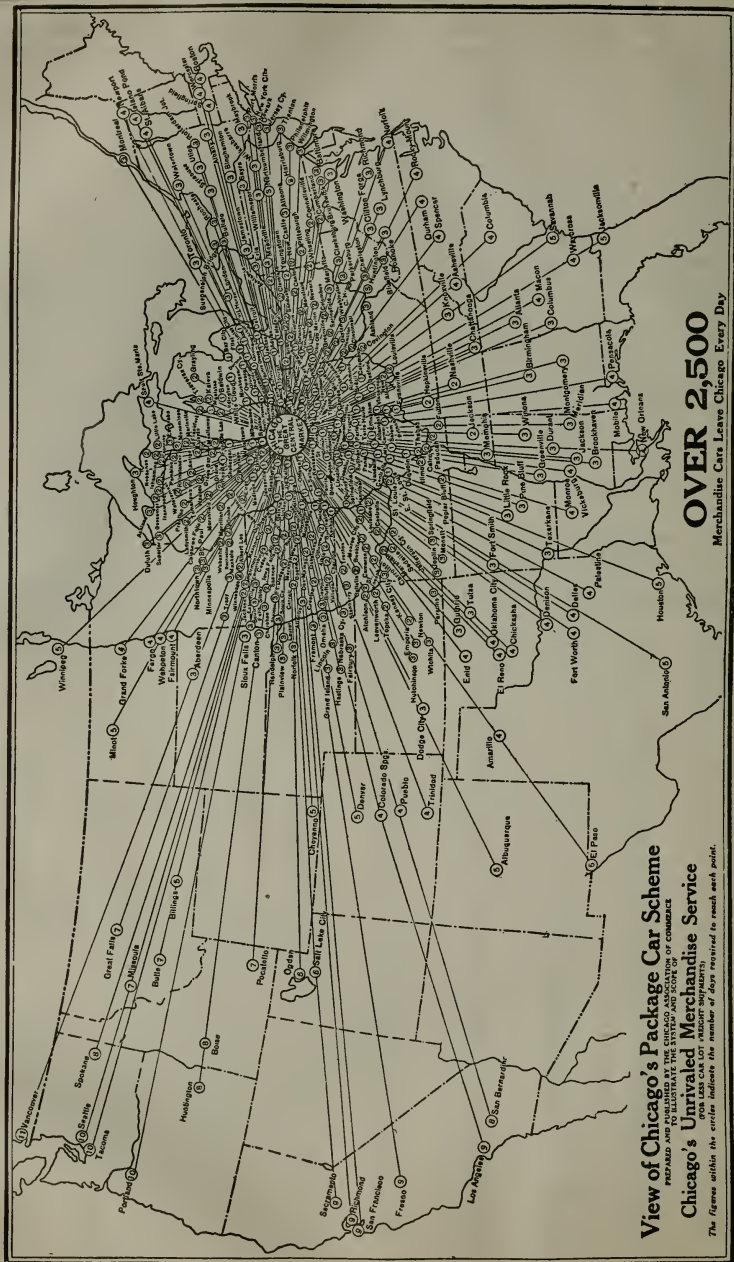
Parcels must not be more than 84 inches in length or girth, nor fastened together in any manner liable to cause injury to postal employees or equipment. It must be of a character not perishable within a reasonable period.

All pieces of machinery and sharp pointed or edged pieces must be thoroughly protected and wrapped in cloth or strong paper, or be crated or boxed.

Regular mail carriers deliver parcel post mail whenever possible.

CHICAGO PACKAGE CAR SCHEME (For Less than Car Lot Freight Shipments)

Figures within the circles indicate numbers of days required to reach points shown



L. C. L. FREIGHT CLASSIFICATIONS.

Freight shipments originating in Chicago are divided into four general territories for purposes of classifications—the Eastern, or official, the Southern, Western and Illinois, officially designated as E. S. W. and I.

The Eastern, or Official, Territory embraces all states east of Lake Michigan and Illinois, and north of the Ohio River, including West Virginia, and points on and north of the N. & W. Ry. in Virginia. It also includes all the Central, North Atlantic and New England States and Eastern Canada. In addition it includes Louisville, Henderson and Owensboro, Kentucky, Bristol, Tenn., as well as points on the C. & O. in Kentucky. It also includes the Eastern portion of the Upper Peninsula of Michigan, and all Virginian Ry. Stations.

The Southern Territory embraces all states south of the Ohio River, and those points south of the N. & W. Ry. in Virginia except as shown under the Eastern classification. It also covers points on the west bank of the Mississippi from Helena, Ark., south to New Orleans, La.

The Western Territory includes Wisconsin, the Upper Peninsula of Michigan, except as covered by the Eastern Classifications, and the state of Minnesota except as provided for in the Illinois Classifications, and all points west of the Mississippi River.

The Illinois Territory includes the state of Illinois, and those points on the west bank of the Mississippi from St. Louis, Mo., to Dubuque, Iowa, inclusive.

Explanation of Characters in the Tables Below.

1—First Class

3—Third Class

5—Fifth Class

2—Second Class

4—Fourth Class

6—Sixth Class

1½—1½ times First Class

D1—Double First Class

R25—Rule 25, E Classification only, 15% less than second class.

R26—Rule 26, E Classification only, 20% less than third class.

N. O. S.—Not otherwise specified. K. D.—Knocked down. S. U.—Set up.

The minimum charge on any shipment is usually at the rate of 100 lbs. at First Class Rate.

ITEMS	Classes				ITEMS	Classes			
	W	I	E	S		W	I	E	S
Adzes	2	3	3	2	Cars	1	1	1	1
Air Compressors	1	2	2	2	Carts, Forecort	3	1	1	1
Air Receivers	3	3	4	...	Carts, Hand, K. D.	1½	1½	D1	1
Anchor	4	4	4	5	Chain, Coil, Iron	4	4	4	5
Angles, Steel	4	4	4	6	Chucks	4	2	2	2
Anvils	4	4	R26	5	Chutes, Coal	3	4	3	3
Asbestos Cement	3	3	R26	5	Chutes, Coal, nested	2	4	3	3
Asbestos Mill Board	3	3	3	3	Clamps, Machinists'	1	2	2	2
Augsers, Post Hole	2	3	R25	3	Clips, Wire Rope	1	2	2	2
Awning	1	1	1	1	Columns, Water	1	2	2	2
Awning Hardware, boxed	3	3	3	1	Compressors	1	2	2	2
Awning Framed (erated or boxed)	2	3	3	3	Conveyors, Screw	3	3	R26	4
Axes	3	4	3	3	Cotters, boxed	2	4	4	4
Rabbit Mctal	4	4	4	4	Cotton, Caulking	1	2	2	2
Bars, Crow, etc.	4	4	4	4	Cots, Wire	1	2	2	1½
Bars, Grate	4	4	4	4	Cots, Wire, K. D. crated	3	1	1	2
Bars, Steel	4	4	4	6	Covers, Canvas	1	2	2	3
Batteries, Storage	1	1	1	1	Cranes	1	2	2	2
Bams, Steel	1	1	1	1	Crayons, boxed	1	2	2	2
Benchies, Work, S. U.	1½	1½	1½	2	Cutters, Paper	1	2	2	3
Benchies, Work, K. D.	2	2	2	3	Derrick	1	2	2	3
Benders, Rail	3	3	3	3	Derrick Irons	4	4	4	3
Belows	1	1	1	1	Dies and Stocks	2	2	2	2
Belt	1	2	2	2	Diving Apparatus	1	1	1	1
Belt, Link	4	4	4	4	Dogs, Mill	4	2	2	4
Bits, Auger	3	3	3	3	Dollies, Timber	2	2	R25	3
Blocks, Tackle	3	3	3	3	Dressing, Belt	2	2	2	5
Blocks, Swage	3	3	3	5	Drills, Post	1	1	1	1
Blowers, Blacksmith	2	2	2	5	Drills, Power	1	1	1	1
Boards, Wall	3	4	3	5	Drills, Rock	3	4	R26	3
Boilers	3	3	3	5	Elevator Buckets	2	2	2	2
10 feet and under	3	3	2	3	Elevator Boots	2	2	2	2
10 to 30 feet	1	1	2	3	Elevators, S. U., loose	D1	1	1	3
Boilers, Heating, C. I.	4	4	4	3	Elevators, K. D., boxed	2	2	2	3
Set up	1	1	2	1	Engines	2	2	2	3
K. D.	4	3	4	3	Engines, Semi-Portable	2	2	2	3
Boiler Tubes	4	4	4	3	Engines, Hoisting	3	4	3	3
Bolts, Iron, boxed	4	4	4	5	Emery Paper	1	1	1	1
Bolts, Iron, in bags	4	4	4	5	Extinguishers, Fire	3	4	R26	6
Bolts, 12 inches long or over, bbl.	4	4	4	5	Files	2	1	1	1
Brass Wire Cloth	1½	1	1	2	Fire Extinguishers	1	1	1	6
Brooms	1	1	1	1	Fittings, Pipe, Iron	4	4	4	6
Brushes, bundles	1	1	1	1	Fittings, Pipe, Brass	1½	3	3	1
Brushes, boxed	3	2	2	3	Flags Poles, Wood	2	2	1	3
Buckets, Coal	3	2	2	3	Flag Poles, Iron	2	2	2	2
Buckets, Dump	2	2	2	3	Flue Cleaners	2	2	2	2
Buckets, Dredging	3	2	2	3	Forgings, Steel	2	2	2	2
Buckets, Ore	2	2	2	3	Forges, S. U., crated	4	1	1	1
Buckets, Steel	2	2	2	3	Forges, K. D., crated	2	2	2	2
Cable Rools (erated or boxed)	2	3	3	2	Forks	1	1	R25	3
Cable Rools, S. U.	1½	1½	1½	1½	Engels, Wood	2	2	2	3
Camp Furniture	1½	1	1	1	Generators, Electric	1	1	1	3
Canvas, Cotton	1	3	1	1	Globes, Lantern, boxed	2	2	1	2
Car Movers	4	4	R26	3	Gue Heaters	1	3	2	3
Carbide (steel barrels or drums)	2	3	3	3	Guns, Steel, boxed	3	3	2	3

GEO. B. CARPENTER & CO.

L. C. L. FREIGHT CLASSIFICATIONS (Continued)

ITEMS	Classes				ITEMS	Classes			
	W	I	E	S		W	E	I	S
Gongs, Brass, bored.....	2	2	1	2	Rakes.....	2	2	1	2
Governors, Steam.....	1	2	2	3	Itels, Hose, S. U., loose.....	D1	1 1/2	D1	1 1/2
Grain Shovels.....	2	2	x	x	Reels, Hose, S. U., crated.....	1 1/2	1	1 1/2	1
Graphite.....	2	2	3	3	Itels, Hose, wheels off, crated.....	1	1	3	2
Greases, Fall.....	3	3	3	3	Replacers, Car.....	4	4	R26	3
Greases, Metal Cans.....	4	3	R26	3	Rivets.....	4	4	4	6
Grinders.....	1	1	1	2	Rods, Iron.....	4	4	4	6
Grindstones, loose.....	4	4	R26	3	Roofing Paper.....	4	4	R26	5
Grindstones, with frames, K. D.....	3	2	3	3	Rope Clamps.....	4	4	3	4
Hammers, Hand.....	3	2	3	3	Rope, Manila, burlapped.....	3	4	3	4
Hammers, Power.....	1	1	1	3	Rope, Wire.....	4	4	R26	4
Hammers, Steam.....	2	1	1	3	Rosin.....	4	1	1	1
Hammers.....	4	4	3	3	Rubber Boots.....	1	1	1	1
Handles, crated.....	4	4	3	3	Rubber Clothing.....	1	1	1	1
Hangers, Barn Door.....	3	3	R26	4	Sand Blast Outfits.....	1 1/2	3	1	D1
Hangers, Jolt.....	4	2	3	3	Sand Drills.....	1	1 1/2	1	1
Hardware, boxed.....	4	2	3	3	Saw Blades, on Boards.....	1	2	2	1
Hatchets.....	1	2	3	3	Saw Blades, in crates.....	2	2	2	1
Heaters, Asphalt.....	1	2	2	2	Saw Rigs, S. U.....	1	2	2	3
Hoses, Feed Water.....	1	3	4	3	Saw Rigs, K. D., crated.....	2	2	2	3
Hinges or Butts.....	1	3	4	R26	Saw Mill Machinery, K. D., crated.....	2	2	2	3
Hods.....	2	2	2	3	Scales, crated.....	2	2	R25	3
Hoes, Garden.....	2	2	3	R25	Scrapers.....	3	3	R25	4
Hoes, Grub.....	3	3	4	R26	Scrapers, Drag.....	2	2	R25	3
Holists, Chain.....	2	2	3	3	Scrapers, Sidelwalk.....	1 1/2	2	1 1/2	1 1/2
Holists, Steam.....	1	2	3	3	Scrapers, Wheeled.....	1	2	1 1/2	1 1/2
Hooks, Cant.....	3	3	2	2	Screens, Rev.....	1	2	1	1 1/2
Hooks, Lug.....	2	2	3	3	Screens, Rev. K. D.....	1	2	2	2
Hooks, Steel, bundles.....	4	2	3	3	Screens, Sand and Coal.....	1	2	3	2
Hooks, Steel, boxed.....	4	2	3	3	Screens, Brass.....	1	2	3	2
Horsehoes, boxed.....	3	1	1	2	Screws, Iron.....	4	4	3	5
Hose, in bundles.....	2	2	2	3	Screws, Wood, Hand.....	2	2	R25	2
Hose, boxed.....	3	1	2	R26	Scythes.....	2	2	2	2
Hydrants.....	3	1	2	2	Separators.....	3	3	2	2
Injectors.....	1	2	2	2	Shafting, Steel.....	1	1	4	2
Iron and Steel Goods.....	4	4	4	6	Shafting, with Pulleys attached.....	1	1	3	2
Jacks, Wooden.....	1	4	1	3	Shears, loose.....	2	2	3	3
Jacks, Iron.....	1	4	1	3	Shears, K. D., crated.....	3	3	3	3
Kettles, Cauldron.....	3	3	R25	3	Shield, Expansion.....	4	2	4	4
Ladders, crated.....	3	3	1	3	Shoes, Horse.....	4	4	4	6
Lag Screws.....	4	1	4	5	Shovels.....	2	1	R25	2
Lamps, Arc.....	1	1	1	1	Shovels, Snout.....	2	1	2	2
Lamps, Incandescent.....	1 1/2	D1	1 1/2	1	Sledges.....	3	4	R26	4
Lanterns, with Globes.....	1	1	1	2	Soap.....	4	4	R26	3
Lath, Metal.....	3	3	3	3	Soap Powder.....	4	4	R26	3
Lath Yarn.....	3	3	2	4	Solder.....	1	2	R25	3
Lead, Bar, Sheet.....	4	4	2	4	Spades.....	2	2	R25	3
Lead, White.....	4	4	1	1	Spikes, Steel.....	D1	D1	D1	D1
Life Preservers.....	1	1	1	1	Sprayers, S. U.....	1	2	1	1 1/2
Lights.....	1	1	1	1	Sprayers, K. D., crated.....	3	3	2	1
Lubricators.....	1	1	1	2	Stakes, Tent.....	3	3	4	6
Machinery, S.....	1	2	2	3	Staples.....	2	2	2	2
Machinery, K. D., boxed.....	1	2	2	3	Stocks and Dies.....	1	3	R25	3
Mandrels, Blacksmith.....	4	4	3	4	Stoves.....	1	3	1 1/2	D1
Mattocks.....	4	4	R26	3	Surveyors' Instruments, in boxes.....	D1	1 1/2	D1	D1
Mixers, Concrete.....	1	2	1	1	Surveyors' Instruments, not boxed.....	3	3	3	3
Mops.....	2	1	1	1	Tampers.....	1	3	3	3
Motors, Electric.....	1	1	1	3	Tapes.....	1	3	4	3
Nails.....	4	4	4	5	Tar, Pine, in barrels.....	1	1	1	2
Nozzles, Brass.....	4	2	2	2	Tarpaulins.....	1	1	1	1
Nuts, Iron.....	4	4	4	5	Tents.....	1	4	4	4
Oakum.....	2	2	2	2	Thumbles, Rope.....	2	2	3	2
Oars, Boat.....	3	3	3	3	Tools.....	3	3	3	5
Oils, barrels.....	3	3	3	3	Tools, Anvil.....	1	2	3	2
Oils, cans, crated.....	2	3	2	3	Tools, Steam.....	1	2	3	2
Oil Cans.....	4	1	1	2	Tools, Mechanics.....	1	2	3	2
Oil Cans, jacketed, crated.....	2	1	1	2	Tools, Logging.....	3	3	2	2
Oiled Clothing.....	1	1	1	1	Tools, Track.....	3	3	3	3
Packing, Hemp.....	3	3	3	3	Tones, Skidding.....	3	3	3	3
Packing, Rubber.....	1	2	3	R25	Torches, Blow.....	1 1/2	1 1/2	1	1
Pails, Galvanized, nested.....	2	2	2	2	Track, Portable.....	2	2	3	4
Pails, Wood, nested.....	2	2	2	2	Traps, Steam.....	1	4	4	2
Painting Machines.....	D	4	1	4	Traps, Steam, over 100 lbs.....	1	4	4	2
Paints.....	4	4	4	4	Trench Braces.....	4	3	4	3
Paper, Building.....	2	4	R26	5	Trucks, Hand.....	3	3	R25	3
Paper, Emery.....	3	4	3	3	Trucks, Horse.....	3	4	4	3
Paper, Roofing.....	3	4	3	3	Turntables.....	4	4	4	3
Paper, Sand.....	3	4	3	3	Twine, Baled.....	2	4	R26	3
Paulins, Canvas.....	1	1	1	2	Valves, Brass.....	2	3	2	2
Pearls.....	3	3	4	2	Varnishes.....	2	2	R26	2
Picks, boxed.....	3	4	R26	4	Washers, Iron.....	4	4	4	4
Pile Hammers.....	2	3	3	3	Waste, Cotton.....	3	4	4	5
Pile Hammers, Steam.....	2	3	3	3	Wedge, Iron.....	4	3	4	4
Pipe, Iron or Steel.....	D1	1	2	D1	Welding Compound.....	3	3	4	4
Pipe, Riveted, loose.....	1	1	2	2	Weights, Sash.....	4	4	4	4
Pipe, Riveted, nested.....	4	4	4	6	Wheelbarrows, S. U.....	1	1	2	2
Pipe, Riveted, nested and crated.....	4	4	4	6	Wheelbarrows, K. D.....	2	2	2	3
Pipe Fittings, Iron.....	4	4	4	6	Wheels, Buffing.....	2	1	1	3
Pins, Drift.....	4	4	4	6	Wheels, Grinding.....	3	2	3	3
Pitch.....	4	4	4	6	Wheels, Well.....	2	2	1	4
Planes.....	4	4	4	6	Whistles, Steam.....	1	3	R25	3
Plates, Steel.....	4	4	4	6	Winches.....	3	4	R25	3
Plows, S. U.....	D1	1	1	1 1/2	Wire Cloth, Steel.....	3	4	3	2
Plows, K. D., boxed.....	3	3	R25	2	Wire, Fence.....	3	4	R26	3
Poles, Pike.....	3	3	3	3	Wire, Reinforcement, Mesh.....	3	4	3	5
Poles, Tent.....	3	3	3	3	Wire Netting.....	3	4	R26	2
Portable Tent Houses.....	1	1	1	1	Wrenches.....	2	3	3	2
Post Drills.....	1	2	3	3					
Pulleys, loose.....	2	2	3	3					
Pulleys, loose, over 100 lbs.....	2	2	3	3					
Pulleys, boxed.....	2	2	3	3					
Pumps, Hand.....	2	2	3	3					
Pumps, Power.....	1	3	2	3					
Pumps, Sand.....	3	2	2	3					
Radiators.....	3	3	3	3					

FREIGHT RATES (per 100 lbs.) LESS THAN CAR LOTS

The tables below give rates to several points in each state. Other towns, not listed here, but in the same parts of states, take practically the same rates, or within a few cents per 100 pounds, more or less.

First refer to Classification Tables and ascertain class to which goods belong. Then note rate per 100 pounds for that class, in table below. Shipments of less than 100 pounds are usually charged as 100 pounds at First Class Rate.

NOTE.—At the time of going to press with this catalog the Interstate Commerce Commission has increased ALL rates approximately 15%, but official rate tables have not yet been compiled.

From CHICAGO To	Freight Rates per 100 lbs.				From CHICAGO To	Freight Rates per 100 lbs.			
	1st Class	2nd Class	3rd Class	4th Class		1st Class	2nd Class	3rd Class	4th Class
ALABAMA					MISSISSIPPI				
Birmingham	\$1.14	\$0.99	\$0.80	\$0.62	Corinth	\$1.07	\$0.91	\$0.75	\$0.52
Mobile	1.10	.90	.75	.58	Greenville	1.10	.90	.75	.58
Montgomery	1.33	1.17	1.00	.77	Jackson	1.18	.99	.80	.67
Tuscaloosa	1.33	1.22	1.01	.79	Natchez	1.10	.90	.75	.58
ARKANSAS					Natasha	1.10	.90	.75	.58
Arkansas City	1.20	1.01	.77	.59	Yazoo City	1.18	.95	.78	.65
Eldorado	1.47	1.27	1.05	.81	MISSOURI				
Helena	1.10	.90	.75	.58	Columbia	.63	.49	.37	.26
Hot Springs	1.55	1.32	1.05	.81	Hannibal	.43	.37	.28	.23
Little Rock	1.20	1.01	.77	.59	Kirksville	.67	.55	.40	.27
Newport	1.11	.91	.70	.58	Mexico	.62	.49	.37	.26
Pine Bluff	1.20	1.01	.77	.59	Poplar Bluff	.69	.58	.47	.36
Texarkana	1.47	1.27	1.08	.92	St. Louis	.46	.37	.29	.23
CALIFORNIA					MONTANA				
Bakersfield	3.40	2.95	2.45	2.07	Billings	2.50	2.09	1.69	1.36
Fresno	3.40	2.95	2.45	2.07	Butte	2.65	2.28	1.85	1.49
Los Angeles	3.40	2.95	2.45	2.07	Glendive	2.08	1.77	1.42	1.06
Sacramento	3.40	2.95	2.45	2.07	Great Falls	2.60	2.22	1.82	1.42
Stockton	3.40	2.95	2.45	2.07	Harre	2.14	1.74	1.42	1.06
FLORIDA					Helena	2.65	2.26	1.85	1.49
Pensacola	1.10	.90	.75	.58	Medicine Lake	2.13	1.81	1.46	1.10
Tallahassee	1.82	1.57	1.35	1.08	Missoula	2.75	2.35	1.93	1.57
IDAHO					Round Up	2.09	1.69	1.36	1.06
Boise	2.81	2.41	2.00	1.65	NEBRASKA				
Motteller	2.65	2.23	1.85	1.49	Lincoln	.85	.70	.49	.36
St. Anthony	1.75	1.34	1.02	1.55	Norfolk	.95	.77	.72	.53
Shoshone	2.69	2.39	1.91	1.56	Omaha	.80	.65	.45	.31
Wardner	2.90	2.51	2.09	1.75	NEVADA				
ILLINOIS					Austin	3.65	3.23	2.89	2.41
Eloomington	.35	.27	.21	.17	Elko	3.32	3.28	2.82	2.40
Centralia	.42	.34	.27	.21	Reno	2.90	2.51	2.09	1.75
Champaign	.34	.27	.21	.17	Yonopah	4.45	3.93	3.37	2.91
Freeport	.31	.25	.20	.15	NORTH DAKOTA				
Galesburg	.37	.30	.23	.19	Bismarck	1.60	1.35	1.07	.78
Quincy	.42	.35	.27	.22	Devils Lake	1.56	1.32	1.03	.73
Savanna	.35	.28	.22	.17	Fargo	1.17	.98	.77	.54
Springfield	.38	.31	.24	.19	Grand Forks	1.24	1.03	.83	.58
INDIANA					Jamestown	1.46	1.23	.97	.69
Columbus	.38	.33	.24	.17	Minot	1.75	1.49	1.20	.87
Elkhart	.26	.23	.21	.13	OHIO				
Evansville	.26	.23	.20	.13	Ashtabula	.48	.39	.30	.20
Ft. Wayne	.30	.26	.21	.14	Cincinnati	.42	.36	.26	.18
Indianapolis	.33	.28	.23	.15	Columbus	.43	.37	.27	.19
Lagansport	.27	.24	.21	.14	Dayton	.42	.36	.26	.18
New Albany	.42	.36	.26	.18	Lima	.39	.34	.25	.17
Richmond	.38	.33	.24	.17	Marietta	.47	.41	.32	.22
IOWA					Toledo	.39	.34	.25	.17
Cedar Rapids	.52	.42	.31	.23	Youngstown	.46	.39	.30	.20
Council Bluffs	.80	.65	.45	.32	OREGON				
Davenport	.39	.31	.24	.20	Baker City	2.90	2.51	2.09	1.75
Des Moines	.60	.48	.36	.27	Portland	3.40	2.95	2.45	2.07
Ft. Dodge	.63	.52	.39	.29	PENNSYLVANIA				
Mason City	.63	.50	.40	.26	Erie	.47	.41	.32	.22
Ottumwa	.55	.44	.33	.25	Pittsburg	.47	.41	.32	.22
Waterloo	.56	.45	.34	.25	SOUTH DAKOTA				
KENTUCKY					Aberdeen	1.14	.95	.67	.50
Rowling Green	.80	.69	.54	.41	Huron	1.14	.95	.67	.50
Frankfort	.62	.53	.41	.31	Rapid City	1.85	1.57	1.30	1.06
Louisville	.42	.37	.27	.19	Sioux Falls	.83	.68	.47	.34
Paduach	.50	.42	.35	.27	Watertown	.82	.66	.45	.34
LOUISIANA					Yankton	.91	.73	.51	.37
La Fayette	1.60	1.35	1.11	1.01	TENNESSEE				
Monroe	1.47	1.27	1.08	.92	Chattanooga	1.05	.90	.73	.59
New Orleans	1.10	.90	.75	.58	Knoxville	1.11	.95	.79	.62
MICHIGAN					Memphis	.85	.65	.53	.43
Alpena	.56	.47	.36	.27	Nashville	.73	.63	.50	.38
Ann Arbor	.39	.34	.25	.17	VIRGINIA				
Cadillac	.49	.43	.33	.24	Tazewell	.88	.75	.57	.41
Calumet	.56	.47	.38	.29	WASHINGTON				
Cheboygan	.58	.47	.37	.27	Bellingham	3.40	2.95	2.45	2.07
Escanaba	.60	.50	.40	.28	No. Yakima	3.17	2.75	2.28	1.92
Grand Rapids	.35	.30	.23	.16	Seattle	3.40	2.95	2.45	2.07
Lansing	.38	.33	.24	.17	Spokane	2.90	2.51	2.09	1.75
Marquette	.60	.50	.40	.28	Walla Walla	2.90	2.51	2.09	1.75
Port Huron	.39	.34	.25	.17	WEST VIRGINIA				
St. Ignace	.52	.44	.34	.25	Parkersburg	.47	.41	.32	.22
MINNESOTA					Wheeling	.47	.41	.32	.22
Albert Lea	.60	.50	.40	.25	WISCONSIN				
Brainerd	.97	.80	.64	.43	Ashland	.65	.55	.44	.28
Duluth	.55	.45	.34	.25	Beloit	.37	.30	.24	.13
Luverne	.80	.65	.45	.32	Chippewa Falls	.60	.50	.40	.25
Mankato	.65	.55	.43	.27	Green Bay	.36	.30	.23	.13
Minneapolis	.95	1.14	.68	.52	La Crosse	.50	.42	.33	.23
Pipestone	.84	.70	.56	.37	Madison	.39	.34	.28	.18
St. Cloud	.84	.70	.56	.37	Milwaukee	.25	.20	.15	.12
Sulavator	.60	.50	.40	.25	Oshkosh	.43	.36	.28	.22
Virginia	.61	.50	.41	.26					
Winona	.50	.42	.33	.23					

EXPRESS RATES (Per 100 Pounds) TO CITIES IN EACH STATE

From CHICAGO To	Express per 100 Pounds	From CHICAGO To	Express per 100 Pounds	From CHICAGO To	Express per 100 Pounds	From CHICAGO To	Express per 100 Pounds
ALABAMA		ILLINOIS		MISSOURI		PENNSYLVANIA	
Birmingham	\$2.40	Alto	\$1.50	Kansas City	\$2.10	Harrisburg	\$2.15
Mobile	2.95	Chicago	1.00	St. Louis	1.40	Pittsburgh	2.30
Montgomery	2.60	Rock Island	1.00	Springfield	2.25	Pittsburgh	2.30
ARIZONA		Springfield	1.15	MONTANA		RHODE ISLAND	
Phoenix	8.00	INDIANA		Billings	5.40	Providence	1.75
Tucson	7.15	Evansville	1.25	Butte	5.55	SOUTH CAROLINA	
ARKANSAS		Fort Wayne	1.00	Helena	6.55	Charleston	3.40
Arkansas City	2.50	Indianapolis	1.00	Kalispell	6.80	Greenville	2.95
Fort Smith	2.90	South Bend .....	.75	Miles City	4.70	Sumter	3.20
Hot Springs	2.90	IOWA		NEBRASKA		SOUTH DAKOTA	
Little Rock	2.65	Des Moines	1.80	Lincoln	2.45	Aberdeen	3.15
Texarkana	3.15	Fort Dodge	1.95	Omaha	3.40	Bellevue	3.80
CALIFORNIA		Sioux City	2.45	North Platte	2.25	Sioux Falls	2.45
Bakersfield	8.90	KANSAS		NEVADA		Watertown	2.75
Los Angeles	8.90	Dodge City	3.55	Carson City	8.65	TENNESSEE	
San Francisco	9.30	Kansas City	2.10	NEW HAMPSHIRE		Jackson	1.95
COLORADO		Wichita	3.15	Concord	2.55	Knoxville	2.40
Denver	4.20	KENTUCKY		NEW JERSEY		Memphis	2.10
Durango	5.90	Frankfort	1.40	Atlantic City	2.40	Nashville	1.75
Grand Junction	5.50	Louisville	1.25	Trenton	2.40	TEXAS	
Leadville	5.00	LOUISIANA		NEW MEXICO		El Paso	5.95
CONNECTICUT		New Orleans	3.10	Santa Fe	4.75	Fort Worth	3.85
Hartford	2.55	Shreveport	3.25	Silver City	6.50	Houston	4.10
DELAWARE		MAINE		NEW YORK		Salt Lake City	6.60
Dover	2.30	Bangor	2.95	Albany	2.30	VERMONT	
DISTRICT OF COLUMBIA		MARYLAND		Buffalo	1.80	Montpelier	2.50
Washington	2.25	Baltimore	2.25	New York	2.40	VIRGINIA	
FLORIDA		Bethesda	2.50	Syracuse	2.00	Richmond	2.60
Jacksonville	3.45	MASSACHUSETTS		NORTH CAROLINA		WASHINGTON	
Miami	4.55	Boston	2.50	Raleigh	2.95	Seattle	8.80
Pensacola	3.10	MICHIGAN		Wilmington	3.20	Spokane	7.75
Tallahassee	3.20	Bessemer	2.25	NORTH DAKOTA		WEST VIRGINIA	
Tampa	4.00	Detroit	2.25	Bismarck	3.85	Charleston	1.85
GEORGIA		Grand Rapids	1.00	Fargo	2.90	Wheeling	1.60
Atlanta	2.60	Traverse City	1.60	Grand Forks	3.25	WISCONSIN	
Macon	2.85	Minneapolis	3.65	Minot	3.50	Ashland	2.25
Savannah	3.20	Crookston	1.00	Williston	4.10	La Crosse	1.35
IDAHO		Duluth	2.40	OHIO		Madison	1.15
Boise	7.85	Grand Rapids	2.75	Cincinnati	1.25	Marquette	1.75
Pocatello	7.00	Minneapolis	2.00	Columbus	1.50	Milwaukee .....	.90
		Winona	1.70	Toledo	1.15	WYOMING	
		MISSISSIPPI		OKLAHOMA		Cheyenne	4.15
		Hattiesburg	2.75	Oklahoma City	3.45	Green River	5.30
		Jackson	2.65	OREGON		Lander	5.35
		Natchez	2.80	Portland	8.85	Sheridan	4.70

SCALE OF FIRST-CLASS EXPRESS CHARGES

Official Scale of Graduated Charges Used by All Express Companies

In the column under your rate, opposite the figures corresponding with weight of your package, will be found the amount you will be required to pay. If the rate to your Station is not shown, refer to the next higher weight of rate, and the result will be within a few cents of the correct charge. For example: If your rate is \$3.00 per 100 pounds, and your package weighs 15 pounds, the express charges will be 66 cents.

When the rate per 100 lbs. is	\$0.60	\$0.75	\$1.00	\$1.25	\$1.50	\$1.75	\$2.00	\$2.25	\$2.50	\$2.75	\$3.00
Pkg. not over											
1 pound	\$0.26	\$0.26	\$0.26	\$0.26	\$0.26	\$0.26	\$0.27	\$0.27	\$0.27	\$0.27	\$0.28
2 pounds .....	.26	.26	.26	.27	.27	.28	.28	.29	.29	.30	.30
3 pounds .....	.26	.26	.27	.28	.28	.29	.30	.31	.32	.32	.33
4 pounds .....	.26	.27	.28	.29	.30	.31	.32	.33	.34	.35	.36
5 pounds .....	.27	.27	.29	.30	.31	.32	.34	.35	.36	.37	.39
6 pounds .....	.27	.27	.29	.30	.31	.32	.34	.35	.36	.37	.39
7 pounds .....	.27	.28	.30	.32	.34	.35	.37	.39	.41	.42	.44
8 pounds .....	.28	.29	.31	.33	.35	.37	.39	.41	.43	.45	.47
9 pounds .....	.28	.29	.32	.34	.36	.38	.41	.43	.45	.47	.50
10 pounds .....	.28	.30	.32	.34	.36	.38	.41	.43	.45	.47	.50
15 pounds .....	.30	.32	.36	.40	.44	.47	.51	.55	.59	.62	.66
20 pounds .....	.32	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80
25 pounds .....	.34	.37	.44	.50	.56	.62	.69	.75	.81	.87	.94
30 pounds .....	.37	.40	.47	.53	.60	.67	.74	.81	.88	.95	1.01
35 pounds .....	.37	.42	.51	.60	.69	.77	.86	.95	1.04	1.12	1.21
40 pounds .....	.39	.45	.55	.65	.75	.85	.95	1.05	1.15	1.25	1.35
45 pounds .....	.41	.47	.57	.67	.79	.91	1.03	1.15	1.26	1.37	1.49
50 pounds .....	.42	.50	.62	.75	.87	1.00	1.12	1.25	1.37	1.50	1.62
When the rate per 100 lbs. is	\$3.25	\$3.50	\$3.75	\$4.00	\$4.50	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00	\$8.00
Pkg. not over											
1 pound	\$0.28	\$0.28	\$0.29	\$0.29	\$0.30	\$0.30	\$0.31	\$0.31	\$0.32	\$0.33	\$0.34
2 pounds .....	.31	.31	.32	.33	.34	.35	.36	.37	.38	.40	.42
3 pounds .....	.34	.35	.36	.38	.39	.41	.42	.44	.45	.48	.51
4 pounds .....	.37	.38	.39	.40	.42	.44	.46	.48	.50	.52	.56
5 pounds .....	.40	.41	.42	.44	.46	.48	.51	.52	.56	.59	.64
6 pounds .....	.43	.44	.46	.47	.50	.53	.56	.58	.62	.65	.71
7 pounds .....	.46	.48	.49	.51	.55	.58	.62	.65	.69	.72	.79
8 pounds .....	.49	.51	.53	.55	.59	.63	.67	.71	.75	.79	.85
9 pounds .....	.54	.56	.59	.63	.68	.73	.77	.81	.85	.89	1.04
10 pounds .....	.57	.57	.60	.62	.67	.72	.77	.82	.87	.92	1.07
15 pounds .....	.70	.74	.77	.81	.89	.96	1.04	1.11	1.19	1.26	1.41
20 pounds .....	.85	.90	.95	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.80
25 pounds	1.00	1.12	1.19	1.31	1.44	1.60	1.75	1.94	2.14	2.36	2.64
30 pounds	1.15	1.22	1.30	1.37	1.52	1.67	1.82	1.97	2.12	2.27	2.57
35 pounds	1.30	1.39	1.47	1.56	1.74	1.91	2.09	2.26	2.44	2.61	2.96
40 pounds	1.45	1.55	1.65	1.75	1.95	2.15	2.35	2.55	2.75	2.95	3.35
45 pounds	1.60	1.71	1.82	1.94	2.16	2.39	2.61	2.84	3.06	3.29	3.74
50 pounds	1.75	1.87	2.00	2.12	2.37	2.62	2.87	3.12	3.37	3.62	4.12

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